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# WILDLIFE MANAGEMENT IN NEW JERSEY

*A Five Year Report*



*"Ten thousand years have dawned and fled,  
And still her magic is the same."*

—STOPFORD BROOKE.



New Jersey State  
Fish and Game Commission

Trenton, New Jersey

1940

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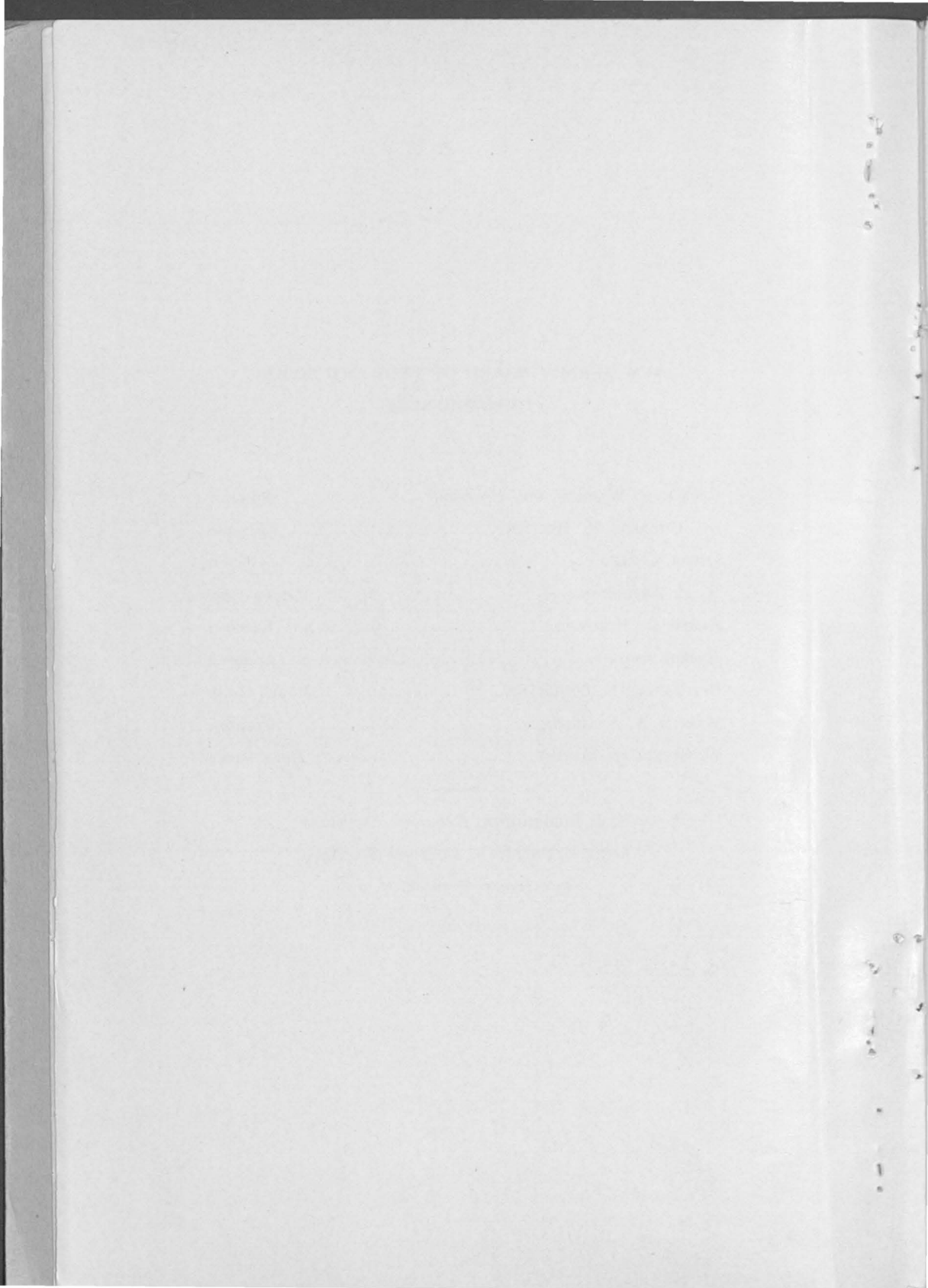
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## FOREWORD

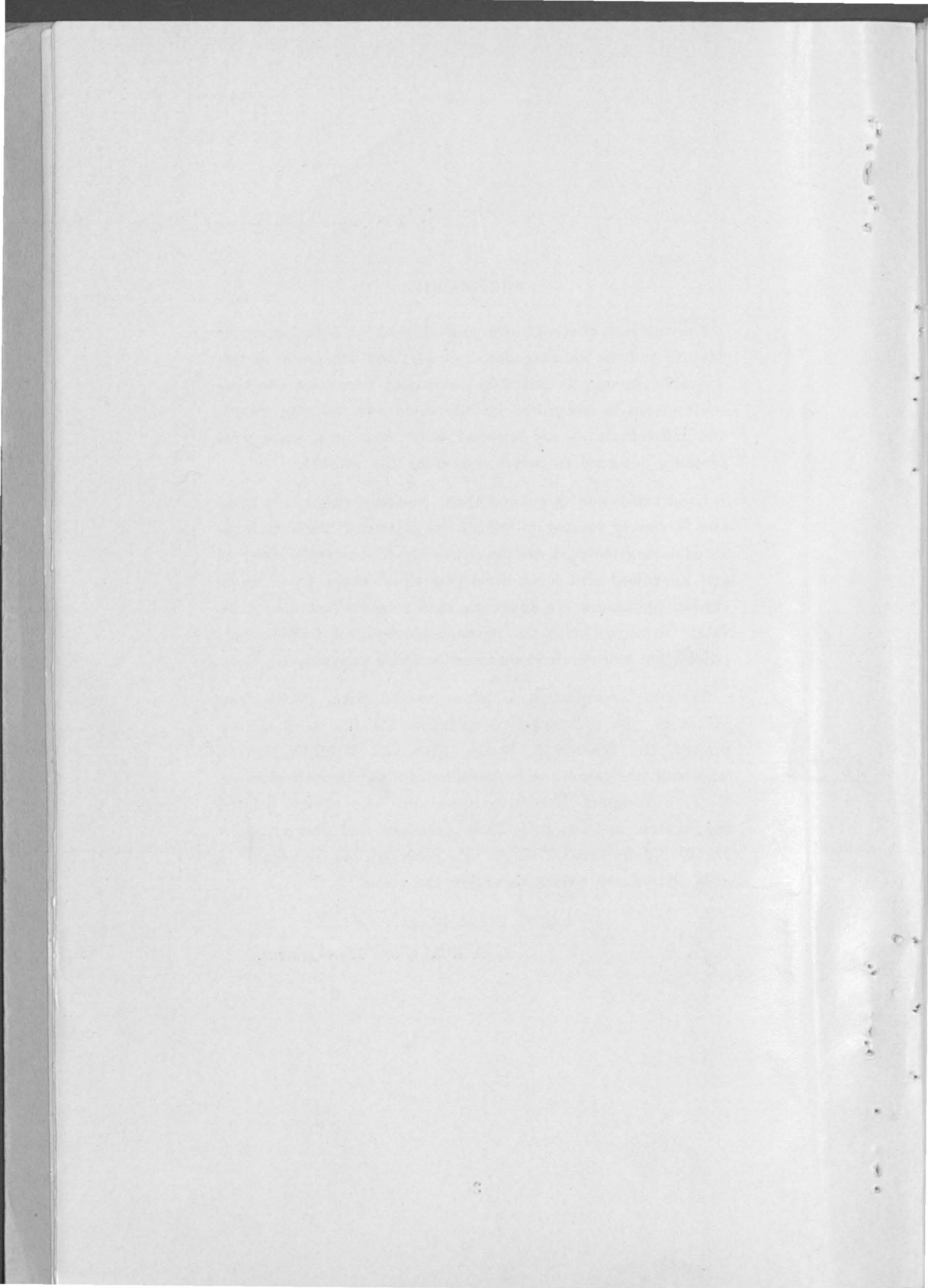
The interest of sportsmen and citizens of New Jersey in wildlife and the maintenance, increase, and utilization of this desirable resource is definitely increasing. Providing adequate environment is recognized by interested and thinking groups and individuals as an essential basic step in a state wide program designed to better conditions for wildlife.

Land utilization is an important problem within this State and is closely related to wildlife populations. Methods innovated during the past five years have been constantly observed and appraised and have developed to a degree from which certain deductions are apparent. It is believed that land utilization in accord with the recommendations set forth in this publication will result in increased wildlife numbers.

Grateful appreciation is given to the State Game Conservators who are largely responsible for the work accomplished, Dr. Warren S. Bourn, Fish and Wildlife Service, who read this resume and offered helpful advice and criticism, H. J. Burlington, Executive Secretary, who offered helpful suggestions, and Dr. S. J. Toth, Assistant Soil Chemist, New Jersey Agricultural College, who checked the reference to soils and offered advice regarding the same.

L. G. MACNAMARA,

*Supt. Wild Game Management.*



## FIVE YEAR GAME MANAGEMENT REPORT

BY

L. G. MACNAMARA, *Superintendent of Wild Game Management,  
New Jersey Fish and Game Commission.*

Wildlife and its accordant benefits have been associated with mankind since time immemorial. Throughout the history of the early advance of civilization, wildlife and resultant products have been utilized by man as food for self-maintenance or barter, and in some instances wildlife products have been regarded as a medium of exchange. Travel, migration, and exploration of new territories can in many instances be traced to an abundance of wildlife indigenous to that locality. The effect of wildlife on early civilization was definite and important.

Modern civilization and present day industrial production of items necessary to the welfare of mankind has in most instances caused wildlife to be consigned to a minor role in general conservation schemes in New Jersey. The status of wildlife and relative products, however, has not been changed; it still remains a significant harvest and one of the more valuable natural resources of the State.

The beneficial economic effect generated by the 150,000 sportsmen who annually go afield within the borders of this State cannot be questioned. Certainly the benefits of such recreation to the sportsmen and others who choose either to use or study wildlife in its various phases is incalculable. The income of the trapping industry is of surprising magnitude and one that is well distributed.

The benefits resulting from the utilization of wildlife cannot be consigned to any particular group such as sportsmen and manufacturers of firearms and ammunition. The citizen of New Jersey who today goes forth to seek the privileges afforded by the wildlife resources of this State deals in varying degrees with the retailers of gasoline and oil, sellers of automotive appurtenances, grocers, guides, boatmen, dog trainers, hostelryes, sporting goods dealers, as well as vendors of many other articles which might be deemed necessary to his well-being or comfort. The economic benefits of wildlife are annual in character and so wide in distribution as to be difficult to calculate. Over a short period of years they add immeasurably to the resources of the State.

The New Jersey State Fish and Game Commission, as the present protector and guardian of the future welfare of that very important resource of wildlife within the bounds of this State, has watched with growing anxiety the march of civilization and the resultant effects of industrialization and mankind's machinations upon various wildlife species.

Of late, far reaching changes have been wrought in the ecology of the State. Uncontrolled burning and cutting can and have ruined many acres of wildlife habitat with resulting decreases in resident species of wildlife. Unrestricted drainage has in many instances altered marsh ecology to such an extent as to reduce considerably the use of these



marshes by waterfowl and fur bearers. Extensive modern agriculture and its components, mainly cutting and grazing, have affected food and cover conditions in an adverse manner in respect to upland game species. Conversely, the reduction of general farming in other sections has created deficient environmental conditions for farm game species.

The future of wildlife populations and the availability of the same are mainly reliant on the maintenance and extension of adequate environment throughout the State. In order that such restoration and maintenance would become a reality, the New Jersey State Fish and Game Commission in 1934 created the Division of Wildlife Management.

Adequate food and cover are the fundamental necessities of a wildlife population. The extent, relationship, and type of food and cover present determines the wildlife species most adaptable to the environment thus created. In most cases these two fundamentals control the concentration of a species that can be maintained on an area. All wildlife regardless of whether it be carnivore, herbivore, or omnivore, relies either directly or indirectly upon vegetable life as a food source. Pheasants, quail, rabbit, grouse, deer, and squirrel, constituting the bulk of upland game life in New Jersey, are not only dependent upon vegetable life for sustenance, but find their homes and protection from their enemies and severe weather in plant associations. Suitable places for breeding, resting, nesting, and protection from heat and cold as well as enemies are formed by brush, vines, grass and trees. Migratory fowl, in their migrations, frequent areas wherein plants of a certain kind are produced that furnish cover and food directly, or where plant associations are of such a nature as to furnish a habitat to certain kinds of life, which in turn form a desirable food for migratory birds. Of the factors responsible for an environment adaptable to a certain species of wildlife, plant life is of utmost importance. Food and cover, the result of plant associations, are necessities to game life and can be the limiting factors of these desirable populations.

Plant species and the ability of flora to fulfill adequately its important part in the restoration, extension, and maintenance of wildlife environments, are governed by soil conditions, moisture, climatic factors, and biotic effects such as competition between plants or the effects of insects, animals or organisms, the results of which might be beneficial or injurious. Certain desirable plants cannot tolerate the generally high acidity of most of New Jersey's soils. The growing season in the extreme northern part of the State in some instances is of too short a duration to allow the maturation of plants that give good results in southern sections. Likewise some plants succumb to the frost and low temperatures of this region. Insects can defoliate a promising array of food plants or the browsing of deer can seriously impair the food value of a food patch. To the points listed above must be added the changes that occur to plant life due to cutting and burning as well as that of normal competition wherein one plant becomes dominant over the other.

Due to the fact that wildlife is dependent upon the soil and the resulting plant life produced, it is necessary to consider the geographic regions of this State. A sketch of these regions is denoted by Figure 1 showing their distribution over 8,224 square miles which comprises the total area of New Jersey.

FIGURE 1

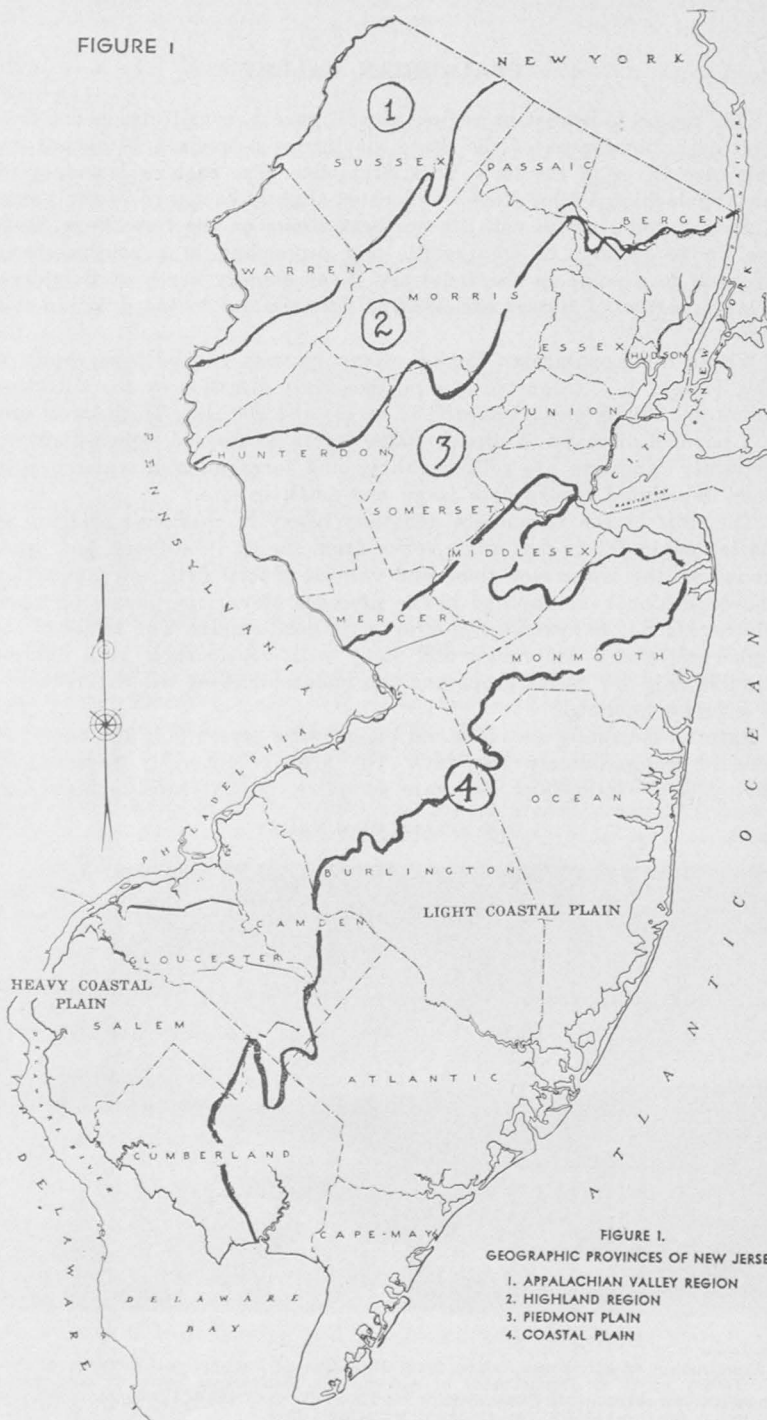


FIGURE 1.  
GEOGRAPHIC PROVINCES OF NEW JERSEY

1. APPALACHIAN VALLEY REGION
2. HIGHLAND REGION
3. PIEDMONT PLAIN
4. COASTAL PLAIN

## APPALACHIAN VALLEY

This region indicated as region 1 on Figure 1, constitutes about one-twelfth the total area of the State, having as a western boundary the Delaware River to the New York State line. The eastern boundary of the Appalachian Valley Region is located slightly eastward of the towns of Sussex and Newton with its northern limits on the New York State line in the vicinity of Quarryville and proceeding in a southwesterly direction to a point on the Delaware River slightly north of Belvidere. A large portion of Sussex and Warren Counties are included within this region.<sup>1</sup>

Within the Appalachian Region exists the most rugged topography of New Jersey. It is traversed in a northeasterly direction by the Kittatiny Mountain, having elevations well in excess of 1,000 feet. To the west and in a parallel direction Wallpack Ridge erects its wooded slopes. Between mountain ramparts are rolling valleys and terraces, well watered with clear unpolluted brooks both large and small in size.

The soils of the region are generally heavy in character and are of glacial origin. Their derivation comes from shales, limestones, and sandstones. In the lower elevations and valleys, glacial drift, stream action and deposition have resulted in the presence of various phases of loam, which responds to agricultural effort with good results. The slopes of the higher elevations are rough and stony with considerable rock outcrop suitable only for forest crops and the maintenance of wildlife receptive to a forest habitat.

Rainfall is usually adequate and the growing season is in the neighborhood of approximately 150 days. The area is generally regarded as having cold winters and moderate summers. Farm crops produced are

### THE APPALACHIAN VALLEY



<sup>1</sup> Description of soil zones taken from Bulletins of various soil surveys of New Jersey by U. S. Department of Agriculture, Bureau of Soils, in cooperation with Department of Conservation and Development and Agricultural Experiment Station.—U. S. Government Printing Office.

corn, oats, rye, wheat, and hay. Dairying is the important agricultural pursuit.

The wooded mountain sides support a growth of Hemlock (*Tsuga canadensis*), White Pine (*Pinus strobus*), various Oaks (*Quercus* sp.), Maples (*Acer* sp.), Ash (*Fraxinus*, sp.), Tulip Tree (*Liriodendron tulipifera*), Hickory (*Carya* sp.), Pitch Pine (*Pinus rigida*), with Rhododendron (*Rhododendron maximum*), Laurel (*Kalmia latifolia*) and associated shrub growths appearing verdantly in some localities. The habitat thus created contains a goodly supply of Ruffed Grouse (*Bonasa umbellus*), Deer (*Odocoileus virginianus*) and squirrel (*Sciurus carolinensis*) as resident gamelife.

Throughout the lower elevations Pheasants (*Colchicus* sp.), and Rabbits (*Sylvilagus floridanus*), occur wherever food and cover is adequate. The occurrence of Bobwhite Quail (*Colinus virginianus*) is occasional. Woodcock (*Philohela minor*) are found in considerable numbers during their migrations, and some natural reproduction of this very interesting bird takes place generally throughout the region. Black Duck (*Anas rubripes*), Mallard (*Anas platyrhynchos*), and Wood Duck (*Aix sponsa*) are present in small numbers in some of the brooks and lakes of the region.

Agricultural practices maintain winter food and cover for quail, pheasants, and rabbits at a minimum. Considerable corn is produced throughout the area for ensilage and fodder. A standing cornfield or corn shocked and standing in the field is fast becoming a rarity in the winter months. Cover crops and green manure crops have reduced the availability of natural weeds for food. Modern farm methods have contributed to the disappearance of the hedgerow. The rail fence of former years has been replaced with clean wire fences. Heavy grazing of stream bottoms has changed these normally brushy grassy areas to a sward of closely cropped turf.

Occasionally are found abandoned fields or farms where the cleared areas are becoming studded with Pitch Pine, Red Cedar (*Juniperus virginiana*), Grey Birch (*Betula populifolia*) and Staghorn Sumach (*Rhus typhina*) accompanied with a growth of Broom Sedge (*Andropogon* sp.). In such areas cover facilities are usually good. Existing hedgerows are usually wide and profuse, rock rows are usually margined with shrubby vegetation. Stream bottoms and swales in most cases contain a heavy growth of Alders (*Alnus* sp.) and associated plants. Although cover facilities in these abandoned areas are much improved over other areas in the region, there exists a definite deficiency of food plants. Correcting this deficiency makes these areas productive of game life.

Good farm lands now being operated are under such strenuous production that no allowances are made toward wildlife or wildlife habitat. It is questionable whether or not wildlife will ever receive consideration on those lands that can produce a profit under present production. It is felt that soil conservation practices will result in increased game life, particularly if such development is directed with this end in view.

It is considered that pheasants, quail and rabbits can be made to increase materially through the use of the abandoned lands throughout



this region. The creation of a food supply will make such areas productive of game life as their idleness has in most cases produced adequate cover facilities. In 1935 the New Jersey State Fish and Game Commission instituted operations designed to improve the food conditions on the abandoned and idle lands situated in the valleys, terraces, and stream bottoms of the Appalachian Valley Region.

### THE HIGHLAND REGION

The Highland District indicated as Region No. 2 on Figure 1, is situated south and east of the Appalachian Valley Region, beginning at a point on the New York State line northeast of Quarryville to the Hudson River and proceeds in a southwestward direction from Cresskill to a point on the Delaware River one half way between Phillipsburg and Frenchtown. This region constitutes approximately one eighth of the total area of the State and within its confines we find northern Hunterdon, Morris and Passaic Counties plus southeastern Sussex and Warren Counties. This hilly, rolling and sometimes mountainous region is an extension of the Appalachian Valley System. Its attractive ridges reach in some instances an elevation in excess of 1,000 feet, interlaced pleasingly with broad valleys. Paralleling the same general direction of the Kittatiny Mountain we find Schooley's Mountain, Allamuchy Mountain, Musconetcong Mountain, Sparta Mountain, Hamburg Mountain, Pohatcong Mountain, and other ridges of interest and beauty. The topography of the area is responsible for the many excellent streams throughout the region. The opportunity for lake construction and utilization has been advantageously utilized by man with the result that some of New Jersey's largest water impoundments exist within this district.

The glacial periods of New Jersey have formed the origin of the soils present in the Highland Region. The higher and steeper elevations are generally stony and contain much rock outcrop. As in the case of the previously referred to region (Appalachian Valley) the higher elevations and steep slopes are only suitable to the production of forest crops and associated wildlife. Throughout the more gradual elevations, terraces and valley levels are found several phases of heavy loams. On the higher elevations the soils are derived from granite and gneiss with the remaining soils being developed from glacial drift and limestone formations. These loams respond well to agricultural pursuit.

The climate of the area is generally regarded as being conducive to cold winters and summers of moderate temperature. Rainfall is ample, being approximately 50 inches, the greater portion of which falls in the spring and summer months. The many streams of the area contain an excellent annual water supply and the many springs within the area are well known for their consistent output. Crops produced throughout the district are mainly corn, oats, rye, wheat, hay and buckwheat. Fruit and truck crops are grown to some extent, with dairying being the important agricultural pursuit with poultry farms in evidence. The growing season is about 155 days, varying with the location.

## THE HIGHLAND REGION



The wooded mountain sides support flora indigenous to the Appalachian Valley system and are practically identical in the northern half of the region with that found in the previously described district. Throughout the southern half of the Highland region the hemlock, laurel and rhododendron disappear. The wooded areas of the northerly portion furnish a suitable habitat for Ruffed Grouse with the number of this species present decreasing as the southern limits of the region are reached. Good populations of deer are confined to the more northern woodlands of the region with squirrels enjoying a general distribution throughout the Highland Zone. The high swamps, stream borders and lowland woods harbor woodcock in large numbers during their intervals of migration. Natural reproduction of this bird occurs throughout the zone to an appreciable extent. New Jersey's heaviest beaver concentrations occur within the northern half of the area and excellent deer populations add immeasurably to the wilderness atmosphere.

The portion of this region that is situated south and west of Dover, wherein the broader valleys exist, is highly productive of pheasants and rabbits. This high yielding farm game area composes approximately one half of the Highland Zone and is an area wherein general farming is practiced. Better food facilities with an excellent cover distribution, created by an orderly array of hedgerows in conjunction with the regular occurrence of small streams, with their accompanying brushy margins, contribute toward the creation and maintenance of a habitat of high efficiency. This existing environment is conducive to the maintenance and production of excellent pheasant and rabbit populations, with bobwhite occurring at irregular intervals.

Present indications are that active agricultural practices will probably alter the producing ability of this area in the future. The tendency toward intense farming augurs that hedgerows will be reduced, stream bottoms grazed, and ensilage and more thorough harvesting methods will reduce the available winter food supply. The reduction in standing corn fields and the plowing of stubble fields during late summer will have a profound detrimental effect upon desirable game life.



#### A CORN STUBBLE FIELD



Intensive agriculture often creates a condition as shown in the above picture causing a reduction in food and cover

Opportunities for habitat maintenance are afforded by the many small areas throughout the region that, due to the rolling topography of the land, are for various reasons unsuited for agricultural purposes. Small areas of stream bottoms, ravines, depressions and knolls offer opportunities for development of wildlife environment that will tend to offset the losses of habitat due to intensified agricultural activities. The inception of soil conservation practices can be made to react to the benefit of wildlife if such technique is instituted with the welfare of wildlife in mind. Existing cover should be saved and development practices should be made in conjunction with present facilities.

That portion of the Highland Region that is situated north of Dover contains a smaller proportion of agricultural land than that encountered in the southern section of the district. Throughout the northern section, excepting the agricultural lands, general conditions are almost identical to those encountered in the Appalachian Valley Region.

In order that the Highland District can maintain its status as a high producer of pheasants and rabbits it is imperative that the present trend of diminishing habitat be offset by the creation of suitable food and cover conditions on areas of low elevations that are not utilized for agriculture or are unsuited to farm activities. Particularly important is the necessity for adequate winter food and cover conditions that will maintain their efficiency throughout the winter and early spring.

#### THE PIEDMONT PLAIN

This region is located south of the Highland Region as indicated in Figure I, denoted by Region 3. Its area constitutes approximately one-fifth the area of the State and represents an area equaling in size the combined areas of the two previously discussed regions. The southern

#### TYPICAL PIEDMONT PLAIN



Excellent cover and good food facilities found in the Piedmont Plain make it New Jersey's greatest producer of wildlife

limit of this region is defined by a line extending from Trenton to Perth Amboy. Within the confines of the Piedmont Plain we find a large portion of Hunterdon, Mercer, Somerset, Bergen, Middlesex, and southeastern Morris and Passaic Counties.

The region is gently rolling with broad fertile valleys interspersed with ridges and hills at intervals which reach an occasional maximum height of almost 900 feet. The Watchung Mountain, Cushetunk Mountain, and Sourland Mountain are typical of the more conspicuous elevations diffused throughout the area. Existing elevations support mixed hardwoods and associated vegetation of various ages.

Conversely, within this area such lowlands as Great Swamp, Black Meadows and Troy Meadows are located. Their interesting wildlife populations and migratory visitants add to the resources of the State. Streams are frequent and generally large.

The soils of the Piedmont Plain are largely residual in character. Various phases of loams create an area of high agricultural activity. The higher elevations, swamps, and stream margins are generally wooded. These wooded areas are connected in many instances by the many miles of brushy hedgerows that traverse the tillable sections of the region. Rainfall is adequate. Winters are cold and summers are of average warmth, resulting in a growing season of approximately 175 days.

General farm management produces excellent crops of corn, wheat, oats and rye. Hay is an important crop with large acreages consisting of alfalfa, timothy and clover enjoying wide distribution. Pasturage is an item of importance due to the fact that dairying is a major farm operation. Crop rotation is practiced and of late, soil conservation principles have been put in operation.

Ruffed grouse are found sporadically and in low numbers in the wooded sections of the region. Squirrels are common and reach abundance in many locations. Deer are slowly increasing and spreading over

the entire woodland and stream bottoms. Woodcock make their appearance in relatively low numbers during migrations. Black ducks, Mallards and wood ducks frequent many of the streams and swamps. Bobwhite are established in those few areas wherever food and cover is sufficient and intelligent shooting is in vogue. Rabbits and pheasants reach their maximum populations within the confines of this region. This excellent population of game species is well known to the sportsman of New Jersey and is the result of diversified cropping, supplemented by excellent cover conditions created by many miles of profuse hedgerows and woody stream bottoms. This is a condition that is general throughout the area and one that makes it the most productive for wildlife within the state.

Within the region there is a tendency to clean up and eradicate hedgerows in order to secure neatness, better crop production, and more tillable area. The reduction of these valuable cover mediums and sheltered travel ways can only result in lower wildlife populations. The increasing utilization of corn for ensilage and the resulting reduction in the acreage of standing corn will correspondingly reduce an important winter food supply. It is probable that the Piedmont Plain will remain a high producer of pheasants and rabbits for many years. Eventually the populations of these desirable species of wildlife will exist only in such numbers and in those localities wherein farming operations maintain desirable environmental factors. To this zone must be applied a broad conservation policy of educational nature designed to perpetuate present habitat conditions.

#### THE COASTAL PLAIN

This region, indicated as the fourth district on Figure 1, constitutes three fifths of the entire area of the State and forms the largest and last soil zone. The area is flat in topography with very slight slopes appearing at intervals. The region is bounded by a line extending from Trenton to Perth Amboy, with the sea to the east, Delaware Bay on the south, with the Delaware River forming the western boundary.

#### THE HEAVY COASTAL PLAIN



The general elevation of the Coastal Plain may be considered as low. Stream bottoms are wide and some streams are sluggish, terminating in tide water. Terraces border the larger streams, particularly along the Delaware River. Extensive upland swamps are common and broad tidal marshes margin the greater portion of the zone.

The soil of the area is mainly due to sedimentation deposited under marine conditions with a smaller percentage of soils of residual character. These soil differences make it necessary to divide the coastal plain into two zones. That portion of the Coastal Plain located west of a line starting at Raritan Bay and following a meandering line near Trenton and south to Port Norris, is referred to as the Heavy Coastal Plain Belt. This area contains loams and sandy loams of good agricultural production and is the region in which greensand marl is found. All that part of the Coastal Plain existing east of such a line as is indicated on Figure 1 is referred to as the Light Coastal Plain and consists of sand, some sandy loams, and otherwise light textured soils of low agricultural productivity.

Part of Middlesex and the greater portions of Mercer, Monmouth, Burlington, Camden, Gloucester, Salem, and part of Cumberland Counties are included in the Heavy Coastal Plain Belt. Within this area are located the noted potato and tomato producing farms with corn, rye, wheat and hay being crops of note. Orchardng, dairying and truck farming are the main agricultural pursuits. Climatic conditions throughout the year are moderate, with rainfall exceeding 50 inches, accompanied with a normal growing season of 180 days.

Agricultural activities within this area have a very pronounced effect upon the wildlife populations of the region. Practically all available winter food for gamelife is produced and governed by farm operations. The intensive tillage connected with the production of potatoes and tomatoes, as well as other truck crop production, eradicates natural food plants and maintains cover at a minimum. In addition the broad utilization of fall cover crops such as rye and wheat removes almost every vestige of winter food over very large areas. However, where fields have recently been allowed to remain fallow, and stubble and standing corn are present, a wildlife supply is found. In such areas the pheasant, bobwhite and cottontail sometimes reach heavy populations. Such excellent examples of satisfactory habitat conditions, however, are the exception rather than the rule in areas where soil conditions make heavy farm production possible.

Woodlands in the heavy Coastal Plain are confined to stream margins and occasional woodlots. Oaks of various species predominate over pine generally throughout the district. Hickory, Red Gum (*Liquidambar styraciflua*), Black Gum (*Nyssa sylvatica*), Birch, Maple, and Alder enjoy a wide distribution. Huckleberry (*Gaylussacia* sp. and *Vaccinium* sp.), Laurel (*Kalmia augustifolia*), Green Brier (*Smilax* spp.) and Holly (*Ilex opaca*) are typical brushy growths found in the Western Coastal Plain.

Wherever proper habitat conditions exist, the Bobwhite and Cottontail Rabbit reproduce and maintain themselves very satisfactorily. Natural

pheasant reproduction and maintenance is low, with the maximum evidences of these factors being present in the more western and northern limits of the Heavy Coastal Plain.

The Light Coastal Plain Zone is located eastward and immediately adjacent to the Heavy Coastal Plain Zone. Within its borders are found the interesting and unusual flora of the "Plains" and the "Pine Barrens". Generally the area assumes a wilderness aspect wherein is woven a series of broad upland swamps with abundant stands of white cedar (*Chamaecyparis thyoides*), while the upland contains a generous growth of pine and oak of several species. That portion of the area adjacent to the coast is margined with broad salt marshes and meadows interlaced with streams, bays, and waterways.

The elevation of the area varies from sea level to approximately 200 feet. Rainfall is in the neighborhood of 50 inches. The weather is generally mild with an accompanying growing season in excess of 170 days, approaching 180 days in some sections. The proximity of the ocean tempers the annual climate, causing snowfalls to be slight and of short duration and prevents summers of excessive heat.

Approximately 80% of the region is composed of woodland, some of which is of scrub type. This forest growth, consisting of many species of oaks, pitch pine, short leaf pine (*Pinus echinata*), laurel, greenbrier, holly, huckleberry, gum, swamp maple, and white cedar, has been ravaged by injudicious cutting and severe burning. Agricultural pursuit is confined to woodland clearings of various sizes generally distributed throughout the area.

#### THE LIGHT COASTAL PLAIN



The soils of this zone are too light and sandy in texture for the profitable production of general farm crops. Agricultural effort is largely confined to the growing of truck crops with fruit crops enjoying a rather general dispersal. Cranberry bogs occupy much of the upland swamp areas. Cultivated blueberry fields are enjoying increased acreage, and poultry production is an important occupation. Cereal production has decreased, with rye, wheat, and oats being very scarce. In 1935 corn



production occupied a total of approximately 4,757 acres in an area of 772,192 acres, which contained 97,534 acres of farmland. 48,279 acres of this area were cropped. Thus corn was grown on only 4.8% of all farmland and constituted only 9.8% of land actually cropped.

The vast acreage confined within the Light Coastal Plain area is deficient in an adequate food supply for desirable game species. Cover facilities are excellent but the meager production of cereal crops, coupled with the fact that abandoned fields immediately become overgrown with Indian grass (*Andropogon sp.*), which in turn is supplanted with pitch pine, creates a dearth of food plants. The main food of the region is oak mast, the supply of which is variable.

The abandoned fields of the region offer an opportunity for food plant production. The response of the bobwhite and cottontail rabbit to food plant developments is very satisfactory. The area is well known for the excellent deer population present within its margins. Pheasants do not find the area acceptable and are sporadic in occurrence and population numbers are small.

The tidal marshes of this region consist of broad lowlands bordering the ocean. These flat acres of herbaceous growth are subjected to tidal flow and vary from a preponderance of salt water marshes to those of brackish conditions and a much smaller proportion of fresh water areas. These marshes constitute a vast area suitable to a huge population of marsh birds, waterfowl and shore birds. The utilization of the marshes by aquatic wildlife is governed by water levels, water surface and the distribution and extent of fresh water areas. Unrestricted drainage can greatly reduce the efficiency of our marshes as wildlife habitats.

Throughout the above mentioned zones the soil, vegetation, and farm practices have a definite effect upon those game animals that contribute the major sport for the hunter of New Jersey. They are mainly—the cottontail rabbit, ring necked pheasant, and bobwhite quail. In order to conserve their numbers and assure adequate increase and maintenance, the New Jersey Board of Fish and Game Commissioners has instituted a policy of environmental improvement. The following pages list the accomplishments of the Division of Game Management during the past five years.

Successful agricultural pursuit in New Jersey demands the application of rigid business methods to farm management. In the resulting administration, no consideration or effort is given to the food or cover production for wildlife. Such production and maintenance of food plants that exist on the land is due to the beneficence of the farm operator. Improvement of the food facilities of wildlife must be supplementary to agricultural practices and must not interfere with maximum crop production. The installation of plants designed to furnish a food supply must be accomplished with a minimum of effort and time, necessitate no maintenance or cultivation, be located to the best advantage of wildlife species and be of a type utilized by as many wildlife species as possible. With this conception at hand, considerable effort has been spent upon the development of plant mixtures and the sowing of grains, the most successful of which are subsequently listed.

### FOOD PATCH MIXTURE NO. 1

|                                         |          |
|-----------------------------------------|----------|
| Buckwheat (tartary) .....               | 10 lbs.  |
| Minnesota Sorghum (waconia amber) ..... | 9 lbs.   |
| Millet (German) .....                   | 10 lbs.  |
| Proso (Japanese millet) .....           | 10 lbs.  |
| Greeley Kaffir .....                    | 9 lbs.   |
| Sudan Grass .....                       | 5 lbs.   |
| Soybeans (Ito San) .....                | 10 lbs.  |
| Cowpeas (New Era) .....                 | 13 lbs.  |
| Rape .....                              | 5 lbs.   |
| Flax .....                              | 10 lbs.  |
| Vetch .....                             | 9 lbs.   |
|                                         | <hr/>    |
|                                         | 100 lbs. |

Seed bed preparation is important. Care in preparing the area in which the above mixture is to be planted is necessary to good production. Soil should be plowed at a time when it is not too wet or when periods of drought have dessicated the moisture content. After plowing, the area should be thoroughly harrowed, utilizing a disc harrow or spring tooth harrow, or variations of the same. Tillage must be complete to insure a maximum of moisture conservation, adequate soil aeration, destruction of weeds, and the creation of additional humus in the soil. Soil preparation is an important factor in producing satisfactory results when planting food patches for wildlife.

Food Patch Mixture No. 1 does not grow well or give satisfactory yields when severe acid conditions are encountered. Soils slightly acid in character or those approaching a neutral condition are capable of producing excellent results in New Jersey. Soils having an acid content in excess of pH 5.8 should receive a treatment of hydrated lime, ground limestone, or ground oyster shell, the amount to be applied to be determined by the acid content of the soil. Particularly does this recommendation pertain to the Coastal Plain Region indicated by Zone 4, Figure 1.

An application of commercial fertilizer or manure greatly enhances the seed production of the mixture. Satisfactory results can often be attained in the Appalachian, Highland, and Piedmont regions when good land is available. However when wasteland is utilized, a commercial fertilizer application at a rate of 250 lbs. per acre is necessary. Operations on the poorer soils of the Coastal Plain make the utilization of fertilizer mandatory. Good results have been received in southern New Jersey by using a 5-8-5 or 5-8-7 fertilizer at a rate of 250 lbs. per acre.

In all instances it is desirable to inoculate soybeans, cowpeas and vetch with nitrogen fixating organisms or bacteria. This inoculum can be procured from seed dealers in several forms.

The mixture is sown at the rate of 20 lbs. per acre. The seed is broadcast on the seed bed and lightly covered with a harrow or drag. No subsequent cultivation is required.

After the creation of the best seed bed possible, the mixture gives best results when planted well after the danger of frost is past and the days are bright and warm. Inasmuch as climatic conditions vary from year to year, optimum planting conditions are also variable to a small degree. The following table indicates the suggested planting dates for the four regions of New Jersey.

## Recommended Planting Intervals for Food Patch Mixture No. 1

| Region | Recommended Planting Interval | Remarks                                                                                                                           |
|--------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| I      | June 1 to June 20             | Early warm weather will allow planting to take place one week earlier.                                                            |
| II     | May 15 to June 25             |                                                                                                                                   |
| III    | May 15 to July 1              |                                                                                                                                   |
| IV     | May 5 to June 15              | Earlier date is recommended in the southernmost part of the coastal plain with the later date applicable to the northern portion. |

### A FOOD PATCH



Food should always be planted in the proximity of adequate cover. To enhance the value of the patch it should not be hunted but it should be regarded as a refuge area.

In using and testing the various mixtures used within the State of New Jersey, it was realized that the food patch represented an artificial plant association. The resultant plant community owes its origin to human endeavor and it is to be expected that environmental conditions would not be optimum to every plant included in the mixture.

Available soil salts, soil texture, aeration, moisture, and temperature vary according to the region of the State in which the planting effort was made. As a result, it is expected that the production of the mixture would vary according to the individual plant response to the above conditions, as well as the ability of the plant to grow in competition with, and tolerate the possible shade created by the other plants in the mixture. In addition, moisture and temperature vary annually and therefore it is not expected that every plant in the mixture will produce consistently and to the same degree in every instance or in every season in New Jersey. Pro-

duction on the part of most of the plants in the mixture will furnish an adequate food supply for the bulk of wildlife that tends to utilize food patches.

Certain plant species give excellent production if row planted and cultivated. However, the sportsman, farmer, and the Fish and Game Commission do not have available labor, time, and in many cases the equipment necessary to carry out a broad program in which subsequent tillage is necessary. Individual plantings of the several species included in the mixture have been made mainly to furnish a standard by which the various observers could judge the respective performance of the plants when produced in the food patch.

It is believed that food production must be State-wide in New Jersey. The food patch mixture is a medium of this production that presents a minimum of maintenance after planting, gives a food supply of long duration, the various kinds of seeds present giving a broad group of food constituents and thereby broadening the utilization of the patch by wildlife.

The following table indicates the results gained from plantings made throughout the four geographic regions of the State. In the following instances the Number 1 Food Patch Mixture was used and was subjected to various conditions and soil types.

In most instances the final recording was made in late autumn in order that the potential winter food supply present in the patch would be tabulated. Thus some of the early maturing plants are listed as failures when regarded from the standpoint of producing winter food.

# FOOD PATCH MIXTURE NUMBER I — CHART NUMBER I — APPALACHIAN VALLEY REGION

KEY TO ABBREVIATIONS: Mix.—Mixture; Med.—Medium; Excel.—Excellent; Lg.—Large; Sm.—Small; Norm.—Normal; Gd.—Good

| Plant                | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged      | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract | Remarks        |
|----------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|-------------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|-------|----------------|
| Observation Number I |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Year—1936   |           |                   |                          |                         |         |                           |         |       |                |
|                      |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Hoosic Loam |           |                   |                          |                         |         |                           |         |       |                |
| Buckwheat            | 4                               | June 22         | Nov. 2           | Mix. 1          | None              | 12"               | Good                 | Med.            | 100%              | Yes         | Yes       | Dry               | 0                        | 4                       | 100     | 0                         | 0       | Roy   |                |
| German Millet        | 4                               | "               | "                | "               | "                 | 24"               | Excel.               | Lg.             | 100%              | No          | No        | "                 | 4                        | 4                       | 100     | 0                         | 0       | "     |                |
| Minn. Sorghum        | 4                               | "               | "                | "               | "                 | 61"               | Good                 | "               | 100%              | "           | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "     |                |
| Proso                | 4                               | "               | "                | "               | "                 | 15"               | Good                 | "               | 100%              | "           | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "     |                |
| Greeley Kaffir       | 4                               | "               | "                | "               | "                 | 56"               | Fair                 | Sm.             | 50%               | "           | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "     |                |
| Sudan Grass          | 4                               | "               | "                | "               | "                 | 63"               | Good                 | "               | 100%              | "           | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "     |                |
| Soy Beans            | 4                               | "               | "                | "               | "                 | 13"               | Poor                 | None            | "                 | "           | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "     | Not Inoculated |
| Cow Peas             | 4                               | "               | "                | "               | "                 | "                 | Failure              | "               | "                 | "           | "         | "                 | 0                        | 0                       | 0       | 4                         | 100     | "     | "              |
| Rape                 | 4                               | "               | "                | "               | "                 | 10"               | Poor                 | "               | "                 | "           | "         | "                 | 0                        | 2                       | 50      | 2                         | 50      | "     | "              |
| Flax                 | 4                               | "               | "                | "               | "                 | "                 | Failure              | "               | "                 | "           | "         | "                 | 0                        | 0                       | 0       | 4                         | 100     | "     | "              |
| Winter Vetch         | 4                               | "               | "                | "               | "                 | "                 | Failure              | "               | "                 | "           | "         | "                 | 0                        | 0                       | 0       | 4                         | 100     | "     | "              |

|                       |   |         |         |        |      |     |         |          |      |             |     |     |   |   |    |   |     |          |                |
|-----------------------|---|---------|---------|--------|------|-----|---------|----------|------|-------------|-----|-----|---|---|----|---|-----|----------|----------------|
| Observation Number II |   |         |         |        |      |     |         |          |      | Year—1936   |     |     |   |   |    |   |     |          |                |
|                       |   |         |         |        |      |     |         |          |      | Hoosic Loam |     |     |   |   |    |   |     |          |                |
| Buckwheat             | 5 | June 16 | Oct. 25 | Mix. 1 | None | 14" | Good    | Med. Lg. | 100% | Yes         | Yes | Dry | 0 | 3 | 60 | 2 | 40  | Wallpack |                |
| German Millet         | 5 | "       | "       | "      | "    | 30" | Good    | "        | 100% | No          | No  | "   | 3 | 3 | 60 | 2 | 40  | "        |                |
| Minn. Sorghum         | 5 | "       | "       | "      | "    | 42" | Good    | Sm.      | 100% | "           | "   | "   | 0 | 3 | 60 | 2 | 40  | "        |                |
| Proso                 | 5 | "       | "       | "      | "    | 15" | Fair    | "        | 100% | "           | "   | "   | 0 | 2 | 40 | 3 | 60  | "        |                |
| Greeley Kaffir        | 5 | "       | "       | "      | "    | 56" | Poor    | "        | 40%  | "           | "   | "   | 0 | 3 | 60 | 2 | 40  | "        |                |
| Sudan Grass           | 5 | "       | "       | "      | "    | 60" | Poor    | "        | 100% | "           | "   | "   | 0 | 3 | 60 | 2 | 40  | "        |                |
| Soy Beans             | 5 | "       | "       | "      | "    | 12" | Failure | None     | "    | "           | "   | "   | 0 | 0 | 0  | 5 | 100 | "        | Not Inoculated |
| Cow Peas              | 5 | "       | "       | "      | "    | "   | Failure | None     | "    | "           | "   | "   | 0 | 0 | 0  | 5 | 100 | "        | "              |
| Rape                  | 5 | "       | "       | "      | "    | "   | Failure | None     | "    | "           | "   | "   | 0 | 0 | 0  | 5 | 100 | "        | "              |
| Flax                  | 5 | "       | "       | "      | "    | "   | Failure | None     | "    | "           | "   | "   | 0 | 0 | 0  | 5 | 100 | "        | "              |
| Winter Vetch          | 5 | "       | "       | "      | "    | "   | Failure | None     | "    | "           | "   | "   | 0 | 0 | 0  | 5 | 100 | "        | "              |

|                        |   |         |        |        |      |     |         |      |      |                      |     |     |   |   |    |   |     |     |                |
|------------------------|---|---------|--------|--------|------|-----|---------|------|------|----------------------|-----|-----|---|---|----|---|-----|-----|----------------|
| Observation Number III |   |         |        |        |      |     |         |      |      | Year—1936            |     |     |   |   |    |   |     |     |                |
|                        |   |         |        |        |      |     |         |      |      | Hoosic Gravelly Loam |     |     |   |   |    |   |     |     |                |
| Buckwheat              | 4 | June 22 | Nov. 2 | Mix. 1 | None | 15" | Good    | Med. | 100% | Yes                  | Yes | Dry | 0 | 3 | 75 | 1 | 25  | Roy |                |
| German Millet          | 4 | "       | "      | "      | "    | 26" | Good    | "    | 100% | No                   | No  | "   | 3 | 3 | 75 | 1 | 25  | "   |                |
| Minn. Sorghum          | 4 | "       | "      | "      | "    | 48" | Fair    | Sm.  | 100% | "                    | "   | "   | 0 | 3 | 75 | 1 | 25  | "   |                |
| Proso                  | 4 | "       | "      | "      | "    | 14" | Fair    | "    | 100% | "                    | "   | "   | 0 | 3 | 75 | 1 | 25  | "   |                |
| Greeley Kaffir         | 4 | "       | "      | "      | "    | 48" | Poor    | "    | 25%  | "                    | "   | "   | 0 | 2 | 50 | 2 | 50  | "   |                |
| Sudan Grass            | 4 | "       | "      | "      | "    | 72" | Excel.  | Lg.  | 100% | "                    | "   | "   | 0 | 1 | 25 | 3 | 75  | "   |                |
| Soy Beans              | 4 | "       | "      | "      | "    | "   | Failure | None | "    | "                    | "   | "   | 0 | 0 | 0  | 4 | 100 | "   | Not Inoculated |
| Cow Peas               | 4 | "       | "      | "      | "    | "   | Failure | "    | "    | "                    | "   | "   | 0 | 0 | 0  | 4 | 100 | "   | "              |
| Rape                   | 4 | "       | "      | "      | "    | "   | Failure | "    | "    | "                    | "   | "   | 0 | 0 | 0  | 4 | 100 | "   | "              |
| Flax                   | 4 | "       | "      | "      | "    | "   | Failure | "    | "    | "                    | "   | "   | 0 | 0 | 0  | 4 | 100 | "   | "              |
| Winter Vetch           | 4 | "       | "      | "      | "    | "   | Failure | "    | "    | "                    | "   | "   | 0 | 0 | 0  | 4 | 100 | "   | "              |



| Plant                 | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Decree<br>Matured | Lodged               | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract    | Remarks        |
|-----------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|----------------------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|----------|----------------|
| Observation Number IV |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Year—1936            |           |                   |                          |                         |         |                           |         |          |                |
|                       |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Hoosic Gravelly Loam |           |                   |                          |                         |         |                           |         |          |                |
| Buckwheat             | 12                              | June 16         | Oct. 26          | Mix. 1          | None              | 12"               | Good                 | Med.            | 100%              | Yes                  | Yes       | Dry               | 0                        | 2                       | 100     | 0                         | 0       | Wallpack |                |
| German Millet         | 12                              | "               | "                | "               | "                 | 24"               | Good                 | Lg.             | 100%              | No                   | No        | "                 | 1                        | 2                       | 100     | 0                         | 0       | "        |                |
| Minn. Sorghum         | 12                              | "               | "                | "               | "                 | 66"               | Good                 | Lg.             | 100%              | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "        |                |
| Proso                 | 12                              | "               | "                | "               | "                 | 18"               | Good                 | Med. Lg.        | 100%              | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "        |                |
| Greeley Kaffir        | 12                              | "               | "                | "               | "                 | 66"               | Good                 | "               | 50%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "        |                |
| Sudan Grass           | 12                              | "               | "                | "               | "                 | 54"               | Good                 | "               | 100%              | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "        |                |
| Soy Beans             | 12                              | "               | "                | "               | "                 |                   | Failure              |                 |                   |                      |           | "                 | 0                        | 0                       | 0       | 2                         | 100     | "        | Not Inoculated |
| Cow Peas              | 12                              | "               | "                | "               | "                 |                   | Failure              |                 |                   |                      |           | "                 | 0                        | 1                       | 0       | 2                         | 100     | "        | "              |
| Rape                  | 12                              | "               | "                | "               | "                 | 12"               | Poor                 | None            |                   |                      |           | "                 | 0                        | 1                       | 50      | 1                         | 50      | "        | "              |
| Flax                  | 12                              | "               | "                | "               | "                 |                   | Failure              |                 |                   |                      |           | "                 | 0                        | 0                       | 0       | 2                         | 100     | "        |                |
| Winter Vetch          | 12                              | "               | "                | "               | "                 |                   | Failure              |                 |                   |                      |           | "                 | 0                        | 0                       | 0       | 2                         | 100     | "        | "              |

|                      |   |         |        |        |      |     |         |      |      |                      |     |     |   |   |     |   |     |             |                |
|----------------------|---|---------|--------|--------|------|-----|---------|------|------|----------------------|-----|-----|---|---|-----|---|-----|-------------|----------------|
| Observation Number V |   |         |        |        |      |     |         |      |      | Year—1936            |     |     |   |   |     |   |     |             |                |
|                      |   |         |        |        |      |     |         |      |      | Hoosic Gravelly Loam |     |     |   |   |     |   |     |             |                |
| Buckwheat            | 1 | June 27 | Nov. 1 | Mix. 1 | None | 12" | Fair    | Sm.  | 100% | Yes                  | Yes | Dry | 0 | 1 | 100 | 0 | 0   | Hainesville |                |
| German Millet        | 1 | "       | "      | "      | "    | 14" | Fair    | Sm.  | 100% | No                   | No  | "   | 1 | 1 | 100 | 0 | 0   | "           |                |
| Minn. Sorghum        | 1 | "       | "      | "      | "    |     | Failure | None |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           |                |
| Proso                | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           |                |
| Greeley Kaffir       | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           |                |
| Sudan Grass          | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           | Not Inoculated |
| Soy Beans            | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           | "              |
| Cow Peas             | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           | "              |
| Rape                 | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           |                |
| Flax                 | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           |                |
| Winter Vetch         | 1 | "       | "      | "      | "    |     | "       | "    |      |                      |     | "   | 0 | 0 | 0   | 1 | 100 | "           | "              |

|                       |   |         |        |        |      |     |         |       |      |                      |     |     |   |   |     |   |     |             |                |
|-----------------------|---|---------|--------|--------|------|-----|---------|-------|------|----------------------|-----|-----|---|---|-----|---|-----|-------------|----------------|
| Observation Number VI |   |         |        |        |      |     |         |       |      | Year—1936            |     |     |   |   |     |   |     |             |                |
|                       |   |         |        |        |      |     |         |       |      | Papakating Silt Loam |     |     |   |   |     |   |     |             |                |
| Buckwheat             | 7 | June 27 | Nov. 1 | Mix. 1 | None | 18" | Good    | Med.  | 100% | Yes                  | Yes | Dry | 0 | 7 | 100 | 0 | 0   | Hainesville |                |
| German Millet         | 7 | "       | "      | "      | "    | 24" | Excel.  | " Lg. | 100% | No                   | No  | "   | 7 | 7 | 100 | 0 | 0   | "           |                |
| Minn. Sorghum         | 7 | "       | "      | "      | "    | 54" | Good    | "     | 100% | "                    | "   | "   | 0 | 7 | 100 | 0 | 0   | "           |                |
| Proso                 | 7 | "       | "      | "      | "    | 17" | Good    | "     | 100% | "                    | "   | "   | 0 | 7 | 100 | 0 | 0   | "           |                |
| Greeley Kaffir        | 7 | "       | "      | "      | "    | 58" | Fair    | Med.  | 30%  | "                    | "   | "   | 0 | 7 | 100 | 0 | 0   | "           |                |
| Sudan Grass           | 7 | "       | "      | "      | "    | 66" | Good    | "     | 100% | "                    | "   | "   | 0 | 7 | 100 | 0 | 0   | "           |                |
| Soy Beans             | 7 | "       | "      | "      | "    | 14" | Poor    | None  |      | "                    | "   | "   | 0 | 7 | 100 | 0 | 0   | "           | Not Inoculated |
| Cow Peas              | 7 | "       | "      | "      | "    |     | Failure | "     |      | "                    | "   | "   | 0 | 0 | 0   | 7 | 100 | "           | "              |
| Rape                  | 7 | "       | "      | "      | "    | 9"  | Fair    | "     |      | "                    | "   | "   | 0 | 7 | 100 | 0 | 0   | "           |                |
| Flax                  | 7 | "       | "      | "      | "    |     | Failure | "     |      | "                    | "   | "   | 0 | 0 | 0   | 7 | 100 | "           |                |
| Winter Vetch          | 7 | "       | "      | "      | "    |     | Failure | "     |      | "                    | "   | "   | 0 | 0 | 0   | 7 | 100 | "           | "              |

### Observation Number VII

|                |   |         |        |        |      |     |        |      |
|----------------|---|---------|--------|--------|------|-----|--------|------|
| Buckwheat      | 1 | June 22 | Nov. 2 | Mix. 1 | None | 12" | Good   | Lg.  |
| German Millet  | 1 | "       | "      | "      | "    | 30" | Excel. | "    |
| Minn. Sorghum  | 1 | "       | "      | "      | "    | 72" | "      | "    |
| Proso          | 1 | "       | "      | "      | "    | 24" | "      | "    |
| Greeley Kaffir | 1 | "       | "      | "      | "    | 72" | Fair   | "    |
| Sudan Grass    | 1 | "       | "      | "      | "    | 72" | Excel. | "    |
| Soy Beans      | 1 | "       | "      | "      | "    |     |        | None |
| Cow Peas       | 1 | "       | "      | "      | "    |     |        |      |
| Rape           | 1 | "       | "      | "      | "    | 8"  | Fair   | "    |
| Flax           | 1 | "       | "      | "      | "    |     |        | "    |
| Winter Vetch   | 1 | "       | "      | "      | "    |     |        | "    |

### Year—1936

|      |        |     |     |   |   |     |   |     |                |
|------|--------|-----|-----|---|---|-----|---|-----|----------------|
| 100% | Yes    | Yes | Dry | 0 | 1 | 100 | 0 | 0   | Roy            |
| 100% | Partly | No  | "   | 1 | 1 | 100 | 0 | 0   | "              |
| 100% | "      | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
| 100% | "      | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
| 20%  | "      | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
| 100% | "      | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
|      |        |     | "   | 0 | 0 | 0   | 1 | 100 | Not Inoculated |
|      |        |     | "   | 0 | 0 | 0   | 1 | 100 | "              |
|      | No     |     | "   | 0 | 1 | 100 | 0 | 0   | "              |
|      |        |     | "   | 0 | 0 | 0   | 1 | 100 | "              |
|      |        |     | "   | 0 | 0 | 0   | 1 | 100 | "              |

### Wallpack Silt Loam

### Observation Number VIII

|                |   |         |         |        |      |     |         |      |
|----------------|---|---------|---------|--------|------|-----|---------|------|
| Buckwheat      | 1 | June 27 | Nov. 11 | Mix. 1 | None | 6"  | Poor    | Sm.  |
| German Millet  | 1 | "       | "       | "      | "    | 12" | Poor    | "    |
| Minn. Sorghum  | 1 | "       | "       | "      | "    |     | Failure | None |
| Proso          | 1 | "       | "       | "      | "    |     | "       | "    |
| Greeley Kaffir | 1 | "       | "       | "      | "    |     | "       | "    |
| Sudan Grass    | 1 | "       | "       | "      | "    |     | "       | "    |
| Soy Beans      | 1 | "       | "       | "      | "    |     | "       | "    |
| Cow Peas       | 1 | "       | "       | "      | "    |     | "       | "    |
| Rape           | 1 | "       | "       | "      | "    |     | "       | "    |
| Flax           | 1 | "       | "       | "      | "    |     | "       | "    |
| Winter Vetch   | 1 | "       | "       | "      | "    |     | "       | "    |

### Year—1936

|      |     |     |     |   |   |   |     |     |                |
|------|-----|-----|-----|---|---|---|-----|-----|----------------|
| 100% | Yes | Yes | Dry | 0 | 0 | 0 | 1   | 100 | Hainesville    |
| 100% | No  | No  | "   | 1 | 0 | 0 | 1   | 100 | "              |
|      |     |     | "   | 0 | 0 | 0 | 1   | 100 | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | Not Inoculated |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |
|      |     |     | "   | 0 | 0 | 1 | 100 | "   | "              |

### Wallpack Silt Loam

23

### Observation Number IX

|                |   |         |        |        |      |     |         |      |
|----------------|---|---------|--------|--------|------|-----|---------|------|
| Buckwheat      | 1 | June 22 | Nov. 2 | Mix. 1 | None | 12" | Good    | Med. |
| German Millet  | 1 | "       | "      | "      | "    | 30" | Excel.  | Lg.  |
| Minn. Sorghum  | 1 | "       | "      | "      | "    | 60" | Excel.  | Lg.  |
| Proso          | 1 | "       | "      | "      | "    | 18" | Good    | Med. |
| Greeley Kaffir | 1 | "       | "      | "      | "    | 72" | Fair    | Lg.  |
| Sudan Grass    | 1 | "       | "      | "      | "    | 72" | Excel.  | "    |
| Soy Beans      | 1 | "       | "      | "      | "    | 12" | Failure | None |
| Cow Peas       | 1 | "       | "      | "      | "    |     | "       | "    |
| Rape           | 1 | "       | "      | "      | "    | 10" | Fair    | "    |
| Flax           | 1 | "       | "      | "      | "    |     | Failure | "    |
| Winter Vetch   | 1 | "       | "      | "      | "    |     | "       | "    |

### Year—1936

|      |     |     |     |   |   |     |     |     |                |
|------|-----|-----|-----|---|---|-----|-----|-----|----------------|
| 100% | Yes | Yes | Dry | 1 | 1 | 100 | 0   | 0   | Roy            |
| 100% | No  | No  | "   | 1 | 1 | 100 | 0   | 0   | "              |
| 100% | "   | "   | "   | 1 | 1 | 100 | 0   | 0   | "              |
| 100% | "   | "   | "   | 1 | 1 | 100 | 0   | 0   | "              |
| 25%  | "   | "   | "   | 1 | 1 | 100 | 0   | 0   | "              |
| 100% | "   | "   | "   | 1 | 1 | 100 | 0   | 0   | "              |
|      | "   | "   | "   | 0 | 0 | 0   | 1   | 100 | Not Inoculated |
|      | "   | "   | "   | 0 | 0 | 1   | 100 | "   | "              |
|      | "   | "   | "   | 0 | 1 | 100 | 0   | 0   | "              |
|      | "   | "   | "   | 0 | 0 | 1   | 100 | "   | "              |
|      | "   | "   | "   | 0 | 0 | 1   | 100 | "   | "              |

### Wallpack Stony Loam

### Observation Number X

|                |   |         |         |        |      |     |         |      |
|----------------|---|---------|---------|--------|------|-----|---------|------|
| Buckwheat      | 1 | June 16 | Oct. 30 | Mix. 1 | None | 12" | Good    | Med. |
| German Millet  | 1 | "       | "       | "      | "    | 24" | Excel.  | Lg.  |
| Minn. Sorghum  | 1 | "       | "       | "      | "    | 48" | Good    | Sm.  |
| Proso          | 1 | "       | "       | "      | "    | 18" | Good    | Sm.  |
| Greeley Kaffir | 1 | "       | "       | "      | "    | 48" | Fair    | Med. |
| Sudan Grass    | 1 | "       | "       | "      | "    | 60" | Good    | Med. |
| Soy Beans      | 1 | "       | "       | "      | "    |     | Failure | None |
| Cow Peas       | 1 | "       | "       | "      | "    |     | "       | "    |
| Rape           | 1 | "       | "       | "      | "    | 12" | Good    | None |
| Flax           | 1 | "       | "       | "      | "    |     | Failure | None |
| Winter Vetch   | 1 | "       | "       | "      | "    |     | "       | "    |

### Year—1936

|      |     |     |     |   |   |     |   |     |                |
|------|-----|-----|-----|---|---|-----|---|-----|----------------|
| 100% | Yes | Yes | Dry | 0 | 1 | 100 | 0 | 0   | Wallpack       |
| 100% | No  | No  | "   | 1 | 1 | 100 | 0 | 0   | "              |
| 100% | "   | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
| 100% | "   | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
| 25%  | "   | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
| 100% | "   | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
|      | "   | "   | "   | 0 | 0 | 0   | 1 | 100 | Not Inoculated |
|      | "   | "   | "   | 0 | 0 | 0   | 1 | 100 | "              |
|      | "   | "   | "   | 0 | 1 | 100 | 0 | 0   | "              |
|      | "   | "   | "   | 0 | 0 | 0   | 1 | 100 | "              |
|      | "   | "   | "   | 0 | 0 | 0   | 1 | 100 | "              |

### Wallpack Shale Loam

| Plant                 | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered | Growing<br>Season | No. Times<br>Predominant<br>Successful<br>Plantings | Percent<br>Unsuccessful<br>Plantings | Percent | Tract | Remarks  |
|-----------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|--------|-----------|-------------------|-----------------------------------------------------|--------------------------------------|---------|-------|----------|
| Observation Number XI |                                 |                 |                  |                 |                   |                   |                      |                 |                   |        |           |                   |                                                     |                                      |         |       |          |
| Buckwheat             | 1                               | June 16         | Oct. 30          | Mix. 1          | None              | 12"               | Good                 | Med.            | 100%              | Yes    | Yes       | Dry               | 0                                                   | 1                                    | 100     | 0     | Wallpack |
| German Millet         | 1                               | "               | "                | "               | "                 | 12"               | Fair                 | Sm.             | 100%              | No     | No        | "                 | 1                                                   | 1                                    | 100     | 0     | "        |
| Minn. Sorghum         | 1                               | "               | "                | "               | "                 | "                 | Failure              | None            | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Proso                 | 1                               | "               | "                | "               | "                 | 12"               | Fair                 | Sm.             | 100%              | "      | "         | "                 | 0                                                   | 1                                    | 100     | 0     | "        |
| Greeley Kaffir        | 1                               | "               | "                | "               | "                 | "                 | Failure              | None            | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Sudan Grass           | 1                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Soy Beans             | 1                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Cow Peas              | 1                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Rape                  | 1                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Flax                  | 1                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |
| Winter Vetch          | 1                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "         | "                 | 0                                                   | 0                                    | 0       | 1     | 100      |

## Observation Number XII

|                     |   |         |        |        |      |     |         |      |      |     |     |     |   |   |     |     |                |
|---------------------|---|---------|--------|--------|------|-----|---------|------|------|-----|-----|-----|---|---|-----|-----|----------------|
| Year—1936           |   |         |        |        |      |     |         |      |      |     |     |     |   |   |     |     |                |
| Wallpack Stony Loam |   |         |        |        |      |     |         |      |      |     |     |     |   |   |     |     |                |
| Buckwheat           | 1 | June 22 | Nov. 2 | Mix. 1 | None | 12" | Good    | Med. | 100% | Yes | Yes | Dry | 1 | 1 | 100 | 0   | Roy            |
| German Millet       | 1 | "       | "      | "      | "    | 30" | Excel.  | Lg.  | 100% | No  | No  | "   | 1 | 1 | 100 | 0   | "              |
| Minn. Sorghum       | 1 | "       | "      | "      | "    | 60" | "       | "    | 100% | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Proso               | 1 | "       | "      | "      | "    | 18" | Good    | Med. | 100% | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Greeley Kaffir      | 1 | "       | "      | "      | "    | 72" | Fair    | Lg.  | 25%  | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Sudan Grass         | 1 | "       | "      | "      | "    | 72" | Good    | Lg.  | 100% | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Soy Beans           | 1 | "       | "      | "      | "    | 12" | Failure | None | "    | "   | "   | "   | 0 | 0 | 1   | 100 | Not Inoculated |
| Cow Peas            | 1 | "       | "      | "      | "    | "   | "       | "    | "    | "   | "   | "   | 0 | 0 | 1   | 100 | "              |
| Rape                | 1 | "       | "      | "      | "    | 10" | Fair    | "    | "    | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Flax                | 1 | "       | "      | "      | "    | "   | Failure | "    | "    | "   | "   | "   | 0 | 0 | 1   | 100 | "              |
| Winter Vetch        | 1 | "       | "      | "      | "    | "   | "       | "    | "    | "   | "   | "   | 0 | 0 | 1   | 100 | "              |

## Observation Number XIII

|                 |   |         |         |        |                  |     |         |      |      |     |     |     |   |   |     |     |                |
|-----------------|---|---------|---------|--------|------------------|-----|---------|------|------|-----|-----|-----|---|---|-----|-----|----------------|
| Year—1936       |   |         |         |        |                  |     |         |      |      |     |     |     |   |   |     |     |                |
| Lackawanna Loam |   |         |         |        |                  |     |         |      |      |     |     |     |   |   |     |     |                |
| Buckwheat       | 1 | June 16 | Oct. 30 | Mix. 1 | 2000 lb.<br>Lime | 12" | Fair    | Med. | 100% | Yes | Yes | Dry | 1 | 1 | 100 | 0   | Wallpack       |
| German Millet   | 1 | "       | "       | "      | "                | 18" | Fair    | "    | 100% | No  | No  | "   | 1 | 1 | 100 | 0   | "              |
| Minn. Sorghum   | 1 | "       | "       | "      | "                | 48" | Fair    | "    | 100% | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Proso           | 1 | "       | "       | "      | "                | 12" | Fair    | "    | 100% | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Greeley Kaffir  | 1 | "       | "       | "      | "                | 36" | Fair    | "    | 25%  | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Sudan Grass     | 1 | "       | "       | "      | "                | 48" | Fair    | Sm.  | 100% | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Soy Beans       | 1 | "       | "       | "      | "                | 12" | Failure | None | "    | "   | "   | "   | 0 | 0 | 1   | 100 | Not Inoculated |
| Cow Peas        | 1 | "       | "       | "      | "                | "   | "       | "    | "    | "   | "   | "   | 0 | 0 | 1   | 100 | "              |
| Rape            | 1 | "       | "       | "      | "                | 10" | Fair    | "    | "    | "   | "   | "   | 1 | 1 | 100 | 0   | "              |
| Flax            | 1 | "       | "       | "      | "                | "   | Failure | "    | "    | "   | "   | "   | 0 | 0 | 1   | 100 | "              |
| Winter Vetch    | 1 | "       | "       | "      | "                | "   | "       | "    | "    | "   | "   | "   | 0 | 0 | 1   | 100 | "              |

# Observation Number XIV

|                | 1 | June 16 | Oct. 30 | Mix. 1 | 2000 lb.<br>Lime |
|----------------|---|---------|---------|--------|------------------|
| Buckwheat      | 1 | "       | "       | "      | "                |
| German Millet  | 1 | "       | "       | "      | "                |
| Minn. Sorghum  | 1 | "       | "       | "      | "                |
| Proso          | 1 | "       | "       | "      | "                |
| Greeley Kaffir | 1 | "       | "       | "      | "                |
| Sudan Grass    | 1 | "       | "       | "      | "                |
| Soy Beans      | 1 | "       | "       | "      | "                |
| Cow Peas       | 1 | "       | "       | "      | "                |
| Rape           | 1 | "       | "       | "      | "                |
| Flax           | 1 | "       | "       | "      | "                |
| Winter Vetch   | 1 | "       | "       | "      | "                |

|                | 19" | Good    | Med. |
|----------------|-----|---------|------|
| Buckwheat      | 24" | Fair    | Sm.  |
| German Millet  | 42" | Poor    | Sm.  |
| Minn. Sorghum  | 48" | Fair    | Sm.  |
| Proso          | 42" | Failure | None |
| Greeley Kaffir | 12" | Poor    | "    |
| Sudan Grass    | "   | Failure | "    |
| Soy Beans      | "   | "       | "    |
| Cow Peas       | "   | "       | "    |
| Rape           | "   | "       | "    |
| Flax           | "   | "       | "    |
| Winter Vetch   | "   | "       | "    |

# Year—1936

|                | 100% | Yes | Yes |
|----------------|------|-----|-----|
| Buckwheat      | 100% | No  | No  |
| German Millet  | 100% | "   | "   |
| Minn. Sorghum  | 100% | "   | "   |
| Proso          | 100% | "   | "   |
| Greeley Kaffir | 20%  | "   | "   |
| Sudan Grass    | 100% | "   | "   |
| Soy Beans      | "    | "   | "   |
| Cow Peas       | "    | "   | "   |
| Rape           | "    | "   | "   |
| Flax           | "    | "   | "   |
| Winter Vetch   | "    | "   | "   |

# Hoosic Gravelly Loam

|                | Dry | 0 | 1 | 100 | 0 | 0   | Wallpack       |
|----------------|-----|---|---|-----|---|-----|----------------|
| Buckwheat      | "   | 1 | 1 | 100 | 0 | 0   | "              |
| German Millet  | "   | 0 | 1 | 100 | 0 | 0   | "              |
| Minn. Sorghum  | "   | 0 | 1 | 100 | 0 | 0   | "              |
| Proso          | "   | 0 | 1 | 100 | 0 | 0   | "              |
| Greeley Kaffir | "   | 0 | 1 | 100 | 0 | 0   | "              |
| Sudan Grass    | "   | 0 | 1 | 100 | 0 | 0   | "              |
| Soy Beans      | "   | 0 | 0 | 0   | 1 | 100 | Not inoculated |
| Cow Peas       | "   | 0 | 0 | 0   | 1 | 100 | "              |
| Rape           | "   | 0 | 1 | 100 | 0 | 0   | "              |
| Flax           | "   | 0 | 0 | 0   | 1 | 100 | "              |
| Winter Vetch   | "   | 0 | 0 | 0   | 1 | 100 | "              |

# Observation Number XV

|                | 6 | May 25 | Oct. 13 | Mix. 1 | None |
|----------------|---|--------|---------|--------|------|
| Buckwheat      | 6 | "      | "       | "      | "    |
| German Millet  | 6 | "      | "       | "      | "    |
| Minn. Sorghum  | 6 | "      | "       | "      | "    |
| Proso          | 6 | "      | "       | "      | "    |
| Greeley Kaffir | 6 | "      | "       | "      | "    |
| Sudan Grass    | 6 | "      | "       | "      | "    |
| Soy Beans      | 6 | "      | "       | "      | "    |
| Cow Peas       | 6 | "      | "       | "      | "    |
| Rape           | 6 | "      | "       | "      | "    |
| Flax           | 6 | "      | "       | "      | "    |
| Winter Vetch   | 6 | "      | "       | "      | "    |

|                | 36" | Good    | Med. |
|----------------|-----|---------|------|
| Buckwheat      | 68" | "       | "    |
| German Millet  | 42" | "       | "    |
| Minn. Sorghum  | 62" | Fair    | Sm.  |
| Proso          | 64" | Good    | "    |
| Greeley Kaffir | "   | Failure | None |
| Sudan Grass    | 15" | Good    | Med. |
| Soy Beans      | 16" | Good    | None |
| Cow Peas       | 22" | Med.    | "    |
| Rape           | 24" | "       | None |
| Flax           | "   | "       | "    |
| Winter Vetch   | "   | "       | "    |

# Year—1937

|                | 100% | Partly | No |
|----------------|------|--------|----|
| Buckwheat      | 100% | "      | "  |
| German Millet  | 100% | "      | "  |
| Minn. Sorghum  | 100% | "      | "  |
| Proso          | 75%  | "      | "  |
| Greeley Kaffir | 100% | "      | "  |
| Sudan Grass    | "    | "      | "  |
| Soy Beans      | "    | "      | "  |
| Cow Peas       | "    | "      | "  |
| Rape           | "    | "      | "  |
| Flax           | "    | "      | "  |
| Winter Vetch   | "    | "      | "  |

# Hoosic Loam

|                | Norm. | 0 | 0 | 6  | 100 | Roy |
|----------------|-------|---|---|----|-----|-----|
| Buckwheat      | "     | 1 | 5 | 83 | 1   | 17  |
| German Millet  | "     | 4 | 5 | 83 | 1   | 17  |
| Minn. Sorghum  | "     | 0 | 1 | 17 | 5   | 83  |
| Proso          | "     | 0 | 5 | 83 | 1   | 17  |
| Greeley Kaffir | "     | 0 | 5 | 83 | 1   | 17  |
| Sudan Grass    | "     | 0 | 0 | 0  | 6   | 100 |
| Soy Beans      | "     | 0 | 5 | 83 | 1   | 17  |
| Cow Peas       | "     | 0 | 2 | 33 | 4   | 67  |
| Rape           | "     | 0 | 5 | 83 | 1   | 17  |
| Flax           | "     | 0 | 1 | 17 | 5   | 83  |
| Winter Vetch   | "     | 0 | 1 | 17 | 5   | 83  |

# Observation Number XVI

|                | 6 | May 15 | Oct. 10 | Mix. 1 | None |
|----------------|---|--------|---------|--------|------|
| Buckwheat      | 6 | "      | "       | "      | "    |
| German Millet  | 6 | "      | "       | "      | "    |
| Minn. Sorghum  | 6 | "      | "       | "      | "    |
| Proso          | 6 | "      | "       | "      | "    |
| Greeley Kaffir | 6 | "      | "       | "      | "    |
| Sudan Grass    | 6 | "      | "       | "      | "    |
| Soy Beans      | 6 | "      | "       | "      | "    |
| Cow Peas       | 6 | "      | "       | "      | "    |
| Rape           | 6 | "      | "       | "      | "    |
| Flax           | 6 | "      | "       | "      | "    |
| Winter Vetch   | 6 | "      | "       | "      | "    |

|                | 32" | Good    | Med. |
|----------------|-----|---------|------|
| Buckwheat      | 32" | "       | "    |
| German Millet  | 75" | "       | "    |
| Minn. Sorghum  | 42" | "       | "    |
| Proso          | 63" | "       | "    |
| Greeley Kaffir | 69" | "       | "    |
| Sudan Grass    | "   | Failure | None |
| Soy Beans      | 21" | Good    | Med. |
| Cow Peas       | 12" | Fair    | None |
| Rape           | 19" | Good    | Med. |
| Flax           | 30" | Good    | None |
| Winter Vetch   | "   | "       | "    |

# Year—1937

|                | 100% | Yes    | Yes    |
|----------------|------|--------|--------|
| Buckwheat      | 100% | No     | Partly |
| German Millet  | 100% | No     | No     |
| Minn. Sorghum  | 100% | Partly | Partly |
| Proso          | 75%  | No     | No     |
| Greeley Kaffir | 100% | No     | No     |
| Sudan Grass    | "    | "      | "      |
| Soy Beans      | "    | "      | "      |
| Cow Peas       | 85%  | Partly | No     |
| Rape           | "    | No     | "      |
| Flax           | 100% | Partly | No     |
| Winter Vetch   | "    | No     | "      |

# Hoosic Loam

|                | Norm. | 0 | 2 | 33 | 4 | 67  | Wallpack |
|----------------|-------|---|---|----|---|-----|----------|
| Buckwheat      | "     | 0 | 3 | 50 | 3 | 50  | "        |
| German Millet  | "     | 2 | 4 | 67 | 2 | 33  | "        |
| Minn. Sorghum  | "     | 0 | 2 | 33 | 4 | 67  | "        |
| Proso          | "     | 2 | 4 | 67 | 2 | 33  | "        |
| Greeley Kaffir | "     | 0 | 4 | 67 | 2 | 33  | "        |
| Sudan Grass    | "     | 0 | 0 | 0  | 6 | 100 | "        |
| Soy Beans      | "     | 0 | 4 | 67 | 2 | 33  | "        |
| Cow Peas       | "     | 0 | 3 | 50 | 3 | 50  | "        |
| Rape           | "     | 0 | 4 | 67 | 2 | 33  | "        |
| Flax           | "     | 0 | 1 | 17 | 5 | 83  | "        |
| Winter Vetch   | "     | 0 | 1 | 17 | 5 | 83  | "        |

# Observation Number XVII

|                | 4 | May 25 | Oct. 11 | Mix. 1 | None |
|----------------|---|--------|---------|--------|------|
| Buckwheat      | 4 | "      | "       | "      | "    |
| German Millet  | 4 | "      | "       | "      | "    |
| Minn. Sorghum  | 4 | "      | "       | "      | "    |
| Proso          | 4 | "      | "       | "      | "    |
| Greeley Kaffir | 4 | "      | "       | "      | "    |
| Sudan Grass    | 4 | "      | "       | "      | "    |
| Soy Beans      | 4 | "      | "       | "      | "    |
| Cow Peas       | 4 | "      | "       | "      | "    |
| Rape           | 4 | "      | "       | "      | "    |
| Flax           | 4 | "      | "       | "      | "    |
| Winter Vetch   | 4 | "      | "       | "      | "    |

|     |         |          |
|-----|---------|----------|
|     | Failure | None     |
| 40" | Good    | Med.     |
| 48" | Poor    | Smut Sm. |
|     | Failure | None     |
| 48" | Fair    | Sm.      |
| 60" | Fair    | Med. Sm. |
|     | Failure | None     |
| 24" | Good    | Med.     |
|     | Failure | None     |
| 18" | Fair    | Med.     |
| 18" | Fair    | None     |

# Year—1937

|                | 100% | No     | No |
|----------------|------|--------|----|
| Buckwheat      | 100% | No     | No |
| German Millet  | 100% | No     | No |
| Minn. Sorghum  | "    | "      | "  |
| Proso          | 50%  | No     | No |
| Greeley Kaffir | 100% | No     | No |
| Sudan Grass    | "    | "      | "  |
| Soy Beans      | "    | "      | "  |
| Cow Peas       | 100% | Partly | No |
| Rape           | "    | No     | "  |
| Flax           | 100% | No     | No |
| Winter Vetch   | "    | No     | "  |

# Hoosic Gravelly Loam

|                | Norm. | 2 | 3 | 75 | 1 | 25  | Roy               |
|----------------|-------|---|---|----|---|-----|-------------------|
| Buckwheat      | "     | 1 | 2 | 50 | 2 | 50  | Destroyed by deer |
| German Millet  | "     | 0 | 0 | 0  | 4 | 100 | "                 |
| Minn. Sorghum  | "     | 0 | 2 | 50 | 2 | 50  | "                 |
| Proso          | "     | 0 | 2 | 50 | 2 | 50  | "                 |
| Greeley Kaffir | "     | 0 | 0 | 0  | 4 | 100 | Destroyed by deer |
| Sudan Grass    | "     | 0 | 1 | 25 | 3 | 75  | "                 |
| Soy Beans      | "     | 0 | 0 | 0  | 4 | 100 | "                 |
| Cow Peas       | "     | 0 | 2 | 50 | 2 | 50  | "                 |
| Rape           | "     | 0 | 1 | 25 | 3 | 75  | "                 |
| Flax           | "     | 0 | 1 | 25 | 3 | 75  | "                 |
| Winter Vetch   | "     | 0 | 1 | 25 | 3 | 75  | "                 |

| Plant                    | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degrees<br>Matured | Lodged | Shattered | Growing<br>Season    | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract       | Remarks |
|--------------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|--------------------|--------|-----------|----------------------|--------------------------|-------------------------|---------|---------------------------|---------|-------------|---------|
| Observation Number XVIII |                                 |                 |                  |                 |                   |                   |                      |                 | Year—1937          |        |           | Hoosic Gravelly Loam |                          |                         |         |                           |         |             |         |
| Buckwheat                | 1                               | June 4          | Oct. 6           | Mix. 1          | None              |                   | Failure              | None            |                    |        |           | Norm.                | 0                        | 0                       | 1       | 100                       |         | Hainesville |         |
| German Millet            | 1                               | "               | "                | "               | "                 | 21"               | Good                 | Med.            | 100%               | No     | No        | "                    | 1                        | 100                     | 0       | 0                         |         | "           |         |
| Minn. Sorghum            | 1                               | "               | "                | "               | "                 |                   | Failure              | None            |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Proso                    | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Greeley Kaffir           | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Sudan Grass              | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Soy Beans                | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Cow Peas                 | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Rape                     | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Flax                     | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Winter Vetch             | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Observation Number XIX   |                                 |                 |                  |                 |                   |                   |                      |                 | Year—1937          |        |           | Hoosic Gravelly Loam |                          |                         |         |                           |         |             |         |
| Buckwheat                | 4                               | May 16          | Oct. 9           | Mix. 1          | None              | 30"               | Good                 | Med. Sm.        | 100%               | Partly | Partly    | Norm.                | 0                        | 3                       | 75      | 1                         | 25      | Wallpack    |         |
| German Millet            | 4                               | "               | "                | "               | "                 | 36"               | Good                 | "               | 100%               | No     | No        | "                    | 0                        | 3                       | 75      | 1                         | 25      | "           |         |
| Minn. Sorghum            | 4                               | "               | "                | "               | "                 | 44"               | Fair                 | Sm.             | 100%               | "      | "         | "                    | 1                        | 3                       | 75      | 1                         | 25      | "           |         |
| Proso                    | 4                               | "               | "                | "               | "                 | 34"               | Good                 | Med. Sm.        | 100%               | Partly | Partly    | "                    | 0                        | 2                       | 50      | 2                         | 50      | "           |         |
| Greeley Kaffir           | 4                               | "               | "                | "               | "                 | 48"               | Poor                 | Sm.             | 50%                | No     | No        | "                    | 0                        | 3                       | 75      | 1                         | 25      | "           |         |
| Sudan Grass              | 4                               | "               | "                | "               | "                 | 48"               | Fair                 | "               | 100%               | "      | "         | "                    | 0                        | 3                       | 75      | 1                         | 25      | "           |         |
| Soy Beans                | 4                               | "               | "                | "               | "                 |                   | Failure              | None            |                    |        |           | "                    | 0                        | 0                       | 4       | 100                       |         | "           |         |
| Cow Peas                 | 4                               | "               | "                | "               | "                 | 15"               | Good                 | Lg.             | 100%               | Yes    | "         | "                    | 0                        | 4                       | 100     | 0                         | 0       | "           |         |
| Rape                     | 4                               | "               | "                | "               | "                 | 12"               | Good                 | None            |                    | No     | "         | "                    | 0                        | 3                       | 75      | 1                         | 25      | "           |         |
| Flax                     | 4                               | "               | "                | "               | "                 | 24"               | Good                 | Med.            | 100%               | "      | "         | "                    | 0                        | 3                       | 75      | 1                         | 25      | "           |         |
| Winter Vetch             | 4                               | "               | "                | "               | "                 | 30"               | Good                 | None            |                    | "      | "         | "                    | 0                        | 2                       | 50      | 2                         | 50      | "           |         |
| Observation Number XX    |                                 |                 |                  |                 |                   |                   |                      |                 | Year—1937          |        |           | Wallpack Silt Loam   |                          |                         |         |                           |         |             |         |
| Buckwheat                | 1                               | June 2          | Oct. 15          | Mix. 1          | None              | 24"               | Fair                 | Sm.             | 100%               | Partly | Partly    | Norm.                | 0                        | 1                       | 100     | 0                         | 0       | Hainesville |         |
| German Millet            | 1                               | "               | "                | "               | "                 | 30"               | Good                 | Med.            | 100%               | No     | No        | "                    | 1                        | 1                       | 100     | 0                         | 0       | "           |         |
| Minn. Sorghum            | 1                               | "               | "                | "               | "                 |                   | Failure              | None            |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Proso                    | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Greeley Kaffir           | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Sudan Grass              | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Soy Beans                | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Cow Peas                 | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Rape                     | 1                               | "               | "                | "               | "                 |                   | "                    | "               |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |
| Flax                     | 1                               | "               | "                | "               | "                 | 24"               | Fair                 | Med.            | 75%                | No     | No        | "                    | 0                        | 1                       | 100     | 0                         | 0       | "           |         |
| Winter Vetch             | 1                               | "               | "                | "               | "                 |                   | Failure              | None            |                    |        |           | "                    | 0                        | 0                       | 1       | 100                       |         | "           |         |

Planted  
in  
area  
occupied  
by  
1936  
patch

Planted  
in  
area  
occupied  
by  
1936  
patch



# Observation Number XXI

|                |   |        |         |        |      |     |         |      |      |        |   |   |       |   |     |     |     |     |                                                          |
|----------------|---|--------|---------|--------|------|-----|---------|------|------|--------|---|---|-------|---|-----|-----|-----|-----|----------------------------------------------------------|
| Buckwheat      | 1 | May 26 | Oct. 12 | Mix. 1 | None |     |         |      |      |        |   |   | Norm. | 0 | 0   | 1   | 100 | Roy | Destroyed by deer                                        |
| German Millet  | 1 | "      | "       | "      | "    | 48" | Failure | None | 100% | No     | " | " | 1     | 1 | 100 | 0   | 0   | "   | Planted<br>in<br>area<br>occupied<br>by<br>1936<br>patch |
| Minn. Sorghum  | 1 | "      | "       | "      | "    | 66" | Good    | Lg.  | 100% | Partly | " | " | 0     | 1 | 100 | 0   | 0   | "   |                                                          |
| Proso          | 1 | "      | "       | "      | "    |     | Failure | None |      |        | " | " | 0     | 0 | 0   | 1   | 100 | "   |                                                          |
| Greeley Kaffir | 1 | "      | "       | "      | "    | 42" | Fair    | Sm.  | 100% | No     | " | " | 0     | 1 | 100 | 0   | 0   | "   |                                                          |
| Sudan Grass    | 1 | "      | "       | "      | "    | 66" |         |      | 100% | "      | " | " | 0     | 1 | 100 | 0   | 0   | "   |                                                          |
| Soy Beans      | 1 | "      | "       | "      | "    |     | Failure | None |      |        | " | " | 0     | 0 | 0   | 1   | 100 | "   |                                                          |
| Cow Peas       | 1 | "      | "       | "      | "    |     | "       | "    |      |        | " | " | 0     | 0 | 0   | 1   | 100 | "   |                                                          |
| Rape           | 1 | "      | "       | "      | "    |     | "       | "    |      |        | " | " | 0     | 0 | 0   | 1   | 100 | "   |                                                          |
| Flax           | 1 | "      | "       | "      | "    | 24" | Good    | Med. | 90%  | "      | " | " | 0     | 1 | 100 | 0   | 0   | "   |                                                          |
| Winter Vetch   | 1 | "      | "       | "      | "    |     | Failure | None |      |        | " | " | 0     | 0 | 1   | 100 | 0   | "   |                                                          |

Planted  
in  
area  
occupied  
by  
1936  
patch

# Observation Number XXII

|                |   |        |        |        |      |     |         |          |      |        |        |       |   |   |     |     |     |          |
|----------------|---|--------|--------|--------|------|-----|---------|----------|------|--------|--------|-------|---|---|-----|-----|-----|----------|
| Buckwheat      | 2 | May 21 | Oct. 9 | Mix. 1 | None | 24" | Good    | Sm.      | 100% | Yes    | Yes    | Norm. | 0 | 1 | 50  | 1   | 50  | Wallpack |
| German Millet  | 2 | "      | "      | "      | "    | 30" | "       | Med.     | 100% | No     | No     | "     | 0 | 1 | 50  | 1   | 50  | "        |
| Minn. Sorghum  | 2 | "      | "      | "      | "    | 63" | "       | Med. Lg. | 100% | "      | "      | "     | 1 | 2 | 100 | 0   | 0   | "        |
| Proso          | 2 | "      | "      | "      | "    | 30" | "       | "        | 100% | Partly | Partly | "     | 0 | 1 | 50  | 1   | 50  | "        |
| Greeley Kaffir | 2 | "      | "      | "      | "    | 57" | Fair    | "        | 60%  | No     | No     | "     | 1 | 2 | 100 | 0   | 0   | "        |
| Sudan Grass    | 2 | "      | "      | "      | "    | 66" | Good    | "        | 100% | "      | "      | "     | 0 | 2 | 100 | 0   | 0   | "        |
| Soy Beans      | 2 | "      | "      | "      | "    |     | Failure | None     |      |        |        | "     | 0 | 0 | 0   | 2   | 100 | "        |
| Cow Peas       | 2 | "      | "      | "      | "    | 14" | Good    | Med.     | 90%  | Partly | Partly | "     | 0 | 2 | 100 | 0   | 0   | "        |
| Rape           | 2 | "      | "      | "      | "    |     | Failure | None     |      |        |        | "     | 0 | 0 | 0   | 2   | 100 | "        |
| Flax           | 2 | "      | "      | "      | "    | 21" | Good    | Med.     | 100% | No     | No     | "     | 0 | 2 | 100 | 0   | 0   | "        |
| Winter Vetch   | 2 | "      | "      | "      | "    |     | Failure | None     |      |        |        | "     | 0 | 0 | 2   | 100 | 0   | "        |

# Observation Number XXIII

|                |   |        |        |        |      |     |         |      |      |    |    |       |   |   |     |     |          |  |
|----------------|---|--------|--------|--------|------|-----|---------|------|------|----|----|-------|---|---|-----|-----|----------|--|
| Buckwheat      | 1 | May 15 | Oct. 5 | Mix. 1 | None |     | Failure | None |      |    |    | Norm. | 0 | 0 | 1   | 100 | Wallpack |  |
| German Millet  | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 |          |  |
| Minn. Sorghum  | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 | "        |  |
| Proso          | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 | "        |  |
| Greeley Kaffir | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 | "        |  |
| Sudan Grass    | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 | "        |  |
| Soy Beans      | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 | "        |  |
| Cow Peas       | 1 | "      | "      | "      | "    |     | "       | "    |      |    |    | "     | 0 | 0 | 1   | 100 | "        |  |
| Rape           | 1 | "      | "      | "      | "    | 12" | Fair    | "    |      | No | "  | "     | 0 | 1 | 100 | 0   | 0        |  |
| Flax           | 1 | "      | "      | "      | "    | 15" | Good    | Med. | 100% | "  | No | "     | 0 | 1 | 100 | 0   | 0        |  |
| Winter Vetch   | 1 | "      | "      | "      | "    | 30" | "       | None |      | "  | "  | "     | 0 | 1 | 100 | 0   | 0        |  |

Planted  
in  
area  
occupied  
by  
1936  
patch

Planted  
in  
area  
occupied  
by  
1936  
patch

# Observation Number XXIV

|                |   |        |        |        |      |     |         |          |      |        |        |       |   |   |     |   |     |             |
|----------------|---|--------|--------|--------|------|-----|---------|----------|------|--------|--------|-------|---|---|-----|---|-----|-------------|
| Buckwheat      | 7 | June 1 | Oct. 5 | MIX. 1 | None | 24" | Good    | Med.     | 100% | Yes    | Yes    | Norm. | 0 | 3 | 42  | 4 | 58  | Hainesville |
| German Millet  | 7 | "      | "      | "      | "    | 40" | "       | "        | 100% | No     | No     | "     | 7 | 7 | 100 | 0 | 0   | "           |
| Minn. Sorghum  | 7 | "      | "      | "      | "    | 54" | Fair    | Sm.      | 100% | No     | No     | "     | 0 | 5 | 72  | 2 | 28  | "           |
| Proso          | 7 | "      | "      | "      | "    | 33" | Good    | Med. Lg. | 100% | Partly | Partly | "     | 0 | 7 | 100 | 0 | 0   | "           |
| Greeley Kaffir | 7 | "      | "      | "      | "    | 44" | Fair    | Sm.      | 75%  | No     | No     | "     | 0 | 5 | 72  | 2 | 28  | "           |
| Sudan Grass    | 7 | "      | "      | "      | "    | 52" | "       | "        | 100% | "      | "      | "     | 0 | 5 | 72  | 2 | 28  | "           |
| Soy Beans      | 7 | "      | "      | "      | "    |     | Failure | None     |      |        |        | "     | 0 | 0 | 0   | 7 | 100 | "           |
| Cow Peas       | 7 | "      | "      | "      | "    |     | "       | "        |      |        |        | "     | 0 | 0 | 0   | 7 | 100 | "           |
| Rape           | 7 | "      | "      | "      | "    |     | "       | "        |      |        |        | "     | 0 | 0 | 0   | 7 | 100 | "           |
| Flax           | 7 | "      | "      | "      | "    |     | "       | "        |      |        |        | "     | 0 | 0 | 0   | 7 | 100 | "           |
| Winter Vetch   | 7 | "      | "      | "      | "    |     | "       | "        |      |        |        | "     | 0 | 0 | 0   | 7 | 100 | "           |

| Plant                  | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged          | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract    | Remarks |
|------------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|-----------------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|----------|---------|
| Observation Number XXV |                                 |                 |                  |                 |                   |                   |                      |                 |                   |                 |           |                   |                          |                         |         |                           |         |          |         |
| Year—1937              |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Lackawanna Loam |           |                   |                          |                         |         |                           |         |          |         |
| Buckwheat              | 1                               | May 15          | Oct. 12          | Mix. 1          | None              | 24"               | Good                 | Med.            | 100%              | Yes             | Yes       | Norm.             | 0                        | 1                       | 100     | 0                         | 0       | Wallpack |         |
| German Millet          | 1                               | "               | "                | "               | "                 | 42"               | "                    | "               | 100%              | Partly          | Partly    | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |
| Minn. Sorghum          | 1                               | "               | "                | "               | "                 | 66"               | "                    | "               | 100%              | No              | No        | "                 | 1                        | 1                       | 100     | 0                         | 0       | "        |         |
| Proso                  | 1                               | "               | "                | "               | "                 | 24"               | "                    | "               | 100%              | Partly          | Partly    | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |
| Greeley Kaffir         | 1                               | "               | "                | "               | "                 | 60"               | Fair                 | Sm.             | 75%               | No              | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |
| Sudan Grass            | 1                               | "               | "                | "               | "                 | 66"               | Good                 | Med.            | 100%              | Partly          | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |
| Soy Beans              | 1                               | "               | "                | "               | "                 | "                 | Failure              | None            | "                 | "               | "         | "                 | 0                        | 0                       | 1       | 100                       | "       | "        |         |
| Cow Peas               | 1                               | "               | "                | "               | "                 | 24"               | Good                 | Med.            | 100%              | Partly          | Partly    | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |
| Rape                   | 1                               | "               | "                | "               | "                 | "                 | Failure              | None            | "                 | "               | "         | "                 | 0                        | 0                       | 1       | 100                       | "       | "        |         |
| Flax                   | 1                               | "               | "                | "               | "                 | 30"               | Good                 | Med.            | 100%              | No              | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |
| Winter Vetch           | 1                               | "               | "                | "               | "                 | 24"               | "                    | None            | "                 | No              | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |         |

## Observation Number XXVI

|                |   |        |         |        |      |     |         |      |      |                     |        |       |   |   |     |     |     |                   |  |
|----------------|---|--------|---------|--------|------|-----|---------|------|------|---------------------|--------|-------|---|---|-----|-----|-----|-------------------|--|
| Year—1937      |   |        |         |        |      |     |         |      |      | Wallpack Stony Loam |        |       |   |   |     |     |     |                   |  |
| Buckwheat      | 1 | May 26 | Oct. 12 | Mix. 1 | None | "   | Failure | None | 100% | No                  | No     | Norm. | 0 | 0 | 1   | 100 | Roy | Destroyed by deer |  |
| German Millet  | 1 | "      | "       | "      | "    | 48" | Good    | Med. | 100% | Partly              | Partly | "     | 1 | 1 | 100 | 0   | 0   | "                 |  |
| Minn. Sorghum  | 1 | "      | "       | "      | "    | 66" | "       | "    | 100% | "                   | "      | "     | 0 | 1 | 100 | 0   | 0   | "                 |  |
| Proso          | 1 | "      | "       | "      | "    | "   | Failure | None | "    | "                   | "      | "     | 0 | 0 | 1   | 100 | "   | "                 |  |
| Greeley Kaffir | 1 | "      | "       | "      | "    | 54" | Fair    | Sm.  | 100% | No                  | Yes    | "     | 0 | 1 | 100 | 0   | 0   | "                 |  |
| Sudan Grass    | 1 | "      | "       | "      | "    | 66" | "       | Med. | 100% | Partly              | Partly | "     | 0 | 1 | 100 | 0   | 0   | "                 |  |
| Soy Beans      | 1 | "      | "       | "      | "    | "   | Failure | None | "    | "                   | "      | "     | 0 | 0 | 1   | 100 | "   | "                 |  |
| Cow Peas       | 1 | "      | "       | "      | "    | "   | "       | "    | "    | "                   | "      | "     | 0 | 0 | 1   | 100 | "   | "                 |  |
| Rape           | 1 | "      | "       | "      | "    | "   | "       | "    | "    | "                   | "      | "     | 0 | 0 | 1   | 100 | "   | "                 |  |
| Flax           | 1 | "      | "       | "      | "    | 24" | Good    | Med. | 100% | No                  | No     | "     | 0 | 1 | 100 | 0   | 0   | "                 |  |
| Winter Vetch   | 1 | "      | "       | "      | "    | "   | Failure | None | "    | "                   | "      | "     | 0 | 0 | 1   | 100 | "   | "                 |  |

## Observation Number XXVII

|                |   |        |         |        |                                  |   |         |      |     |             |   |   |     |     |                          |  |  |  |  |
|----------------|---|--------|---------|--------|----------------------------------|---|---------|------|-----|-------------|---|---|-----|-----|--------------------------|--|--|--|--|
| Year—1938      |   |        |         |        |                                  |   |         |      |     | Hoosic Loam |   |   |     |     |                          |  |  |  |  |
| Buckwheat      | 2 | May 13 | Aug. 18 | Mix. 1 | 1500 Lime<br>200 Ferti-<br>lizer | " | Failure | None | Wet | 0           | 0 | 2 | 100 | Roy |                          |  |  |  |  |
| German Millet  | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Minn. Sorghum  | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   | Injured by late<br>frost |  |  |  |  |
| Greeley Kaffir | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Sudan Grass    | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Soy Beans      | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Cow Peas       | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Rape           | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Flax           | " | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |
| Winter Vetch   | 2 | "      | "       | "      | "                                | " | "       | "    | "   | 0           | 0 | 2 | 100 | "   |                          |  |  |  |  |

|                | 1 | May 16 | Aug. 16 | Mix. 1 |
|----------------|---|--------|---------|--------|
| Buckwheat      | 1 | ..     | ..      | ..     |
| German Millet  | 1 | ..     | ..      | ..     |
| Minn. Sorghum  | 1 | ..     | ..      | ..     |
| Greeley Kaffir | 1 | ..     | ..      | ..     |
| Sudan Grass    | 1 | ..     | ..      | ..     |
| Soy Beans      | 1 | ..     | ..      | ..     |
| Cow Peas       | 1 | ..     | ..      | ..     |
| Rape           | 1 | ..     | ..      | ..     |
| Flax           | 1 | ..     | ..      | ..     |
| Winter Vetch   | 1 | ..     | ..      | ..     |

|     |         |            |
|-----|---------|------------|
| 30" | Failure | None       |
|     | Good    | Med.       |
|     | Failure | None       |
|     | "       | "          |
|     | "       | "          |
| 12" | Fair    | In Blossom |
| 24" | Good    | " "        |
| 12" | Fair    | None       |
| 12" | Good    | Med.       |
| 24" | "       | None       |

|     |    |    |
|-----|----|----|
| 30% | No | No |
|-----|----|----|

| Wet | 0 | 0   | 1 | 100 | Roy |
|-----|---|-----|---|-----|-----|
| 1   |   | 10  | 0 | 0   | "   |
| "   | 0 | 0   | 1 | 100 | "   |
| "   | 0 | 0   | 1 | 100 | "   |
| "   | 0 | 0   | 1 | 100 | "   |
| 0   | 1 | 100 | 0 | 0   | "   |
| 0   | 1 | 100 | 0 | 0   | "   |
| 0   | 1 | 100 | 0 | 0   | "   |
| 0   | 1 | 100 | 0 | 0   | "   |
| 0   | 1 | 100 | 0 | 0   | "   |

Injured by late  
frost

|                |   |        |         |        |
|----------------|---|--------|---------|--------|
| Buckwheat      | 4 | May 18 | Aug. 17 | Mix. 1 |
| German Millet  | 4 | "      | "       | "      |
| Minn. Sorghum  | 4 | "      | "       | "      |
| Greeley Kaffir | 4 | "      | "       | "      |
| Sudan Grass    | 4 | "      | "       | "      |
| Soy Beans      | 4 | "      | "       | "      |
| Cow Peas       | 4 | "      | "       | "      |
| Rape           | 4 | "      | "       | "      |
| Flax           | 4 | "      | "       | "      |
| Winter Vetch   | 4 | "      | "       | "      |

|     |         |            |
|-----|---------|------------|
| 24" | Good    | Med.       |
| 38" | "       | "          |
|     | Failure | None       |
|     | "       | "          |
| 72" | Good    | Med.       |
| 15" | Fair    | In Blossom |
| 21" | Good    | " "        |
| 18" | "       | None       |
| 18" | "       | Med.       |
| 22" | "       | None       |

| 100% | Partly | Partly |
|------|--------|--------|
|------|--------|--------|

|     |   |   |     |   |     |          |
|-----|---|---|-----|---|-----|----------|
| Wet | 0 | 1 | 25  | 3 | 75  | Wallpack |
| "   | 4 | 4 | 100 | 0 | 0   | "        |
| "   |   | 0 | 0   | 4 | 100 | " Inju   |
| "   |   | 0 | 0   | 4 | 100 | "        |
| "   | 0 | 1 | 25  | 3 | 75  | "        |
| "   | 0 | 4 | 100 | 0 | 0   | "        |
| "   | 0 | 4 | 100 | 0 | 0   | "        |
| "   | 0 | 4 | 100 | 0 | 0   | "        |
| "   | 0 | 4 | 100 | 0 | 0   | "        |
| "   | 0 | 4 | 100 | 0 | 0   | "        |

Injured by late  
frost

|                |   |        |         |        |
|----------------|---|--------|---------|--------|
| Buckwheat      | 1 | May 14 | Aug. 19 | Mix. 1 |
| German Millet  | 1 | "      | "       | "      |
| Minn. Sorghum  | 1 | "      | "       | "      |
| Greeley Kaffir | 1 | "      | "       | "      |
| Sudan Grass    | 1 | "      | "       | "      |
| Soy Beans      | 1 | "      | "       | "      |
| Cow Peas       | 1 | "      | "       | "      |
| Rape           | 1 | "      | "       | "      |
| Flax           | 1 | "      | "       | "      |
| Winter Vetch   | 1 | "      | "       | "      |

|     |         |            |
|-----|---------|------------|
| 42" | Failure | None       |
|     | Good    | Med.       |
|     | Failure | None       |
|     | "       | "          |
|     | "       | "          |
| 12" | Good    | In Blossom |
| 18" | "       | "          |
| 9"  | Fair    | None       |
| 18" | Good    | Med.       |
| 24" | "       | None       |

|     |    |    |
|-----|----|----|
| 50% | No | No |
|-----|----|----|

| Wet | 0 | 0 | 1   | 100 | Wallpack |
|-----|---|---|-----|-----|----------|
| "   | 1 | 1 | 100 | 0   | Inju     |
| "   |   | 0 | 0   | 1   | 100      |
| "   |   | 0 | 0   | 1   | 100      |
| "   |   | 0 | 0   | 1   | 100      |
| "   |   | 0 | 0   | 1   | 100      |
| "   | 0 | 1 | 100 | 0   | 0        |
| "   | 0 | 1 | 100 | 0   | 0        |
| "   | 0 | 1 | 100 | 0   | 0        |
| "   | 0 | 1 | 100 | 0   | 0        |
| "   | 0 | 1 | 100 | 0   | 0        |

Injured by late frost

|                |   |        |         |        |
|----------------|---|--------|---------|--------|
| Buckwheat      | 1 | May 12 | Aug. 16 | Mix. 1 |
| German Millet  | 1 | "      | "       | "      |
| Minn. Sorghum  | 1 | "      | "       | "      |
| Greeley Kaffir | 1 | "      | "       | "      |
| Sudan Grass    | 1 | "      | "       | "      |
| Soy Beans      | 1 | "      | "       | "      |
| Cow Peas       | 1 | "      | "       | "      |
| Rape           | 1 | "      | "       | "      |
| Flax           | 1 | "      | "       | "      |
| Winter Vetch   | 1 | "      | "       | "      |

|     |         |      |
|-----|---------|------|
|     | Failure | None |
|     | "       | "    |
|     | "       | "    |
|     | "       | "    |
|     | "       | "    |
|     | "       | "    |
| 8"  | Fair    | "    |
| 12" | Good    | Med. |
| 18" | Fair    | None |

|     |   |   |     |     |          |
|-----|---|---|-----|-----|----------|
| Wet | 0 | 0 | 1   | 100 | Wallpack |
| "   | 0 | 0 | 1   | 100 | " Inj    |
| "   | 0 | 0 | 1   | 100 | "        |
| "   | 0 | 0 | 1   | 100 | "        |
| "   | 0 | 0 | 1   | 100 | "        |
| "   | 0 | 0 | 1   | 100 | "        |
| "   | 0 | 0 | 1   | 100 | "        |
| "   | 0 | 1 | 100 | 0   | "        |
| "   | 0 | 1 | 100 | 0   | "        |
| "   | 0 | 1 | 100 | 0   | "        |

Injured by late frost

| Plant                     | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Deer<br>Matured | Lodged    | Shattered | Growing<br>Season    | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent  | Tract                 | Remarks                     |
|---------------------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-----------------|-----------|-----------|----------------------|--------------------------|-------------------------|---------|---------------------------|----------|-----------------------|-----------------------------|
| Observation Number XXXII  |                                 |                 |                  |                 |                                  |                   |                      |                 |                 | Year—1938 |           | Papakating Silt Loam |                          |                         |         |                           |          |                       |                             |
| Buckwheat                 | 4                               | May 11          | Aug. 22          | Mix. 1          | 1500 Lime<br>200 Ferti-<br>lizer | 24"               | Fair                 | Med.            | 75%             | No        | No        | Wet                  | 0                        | 1                       | 25      | 3                         | 75       | Hainesville           |                             |
| German Millet             | 4                               | "               | "                | "               | "                                | 42"               | Good                 | Med.            | 40%             | "         | "         | "                    | 4                        | 4                       | 100     | 0                         | 0        | "                     |                             |
| Minn. Sorghum             | 4                               | "               | "                | "               | "                                | "                 | Failure              | None            | "               | "         | "         | "                    | 0                        | 0                       | 4       | 100                       | "        | Injured by late frost |                             |
| Greeley Kaffir            | 4                               | "               | "                | "               | "                                | "                 | "                    | "               | "               | "         | "         | "                    | 0                        | 0                       | 4       | 100                       | "        | "                     |                             |
| Sudan Grass               | 4                               | "               | "                | "               | "                                | "                 | "                    | "               | "               | "         | "         | "                    | 0                        | 0                       | 4       | 100                       | "        | "                     |                             |
| Soy Beans                 | 4                               | "               | "                | "               | "                                | "                 | "                    | "               | "               | "         | "         | "                    | 0                        | 0                       | 4       | 100                       | "        | "                     |                             |
| Cow Peas                  | 4                               | "               | "                | "               | "                                | 24"               | Fair                 | In Blossom      | "               | "         | "         | "                    | 4                        | 100                     | 0       | 0                         | "        | "                     |                             |
| Rape                      | 4                               | "               | "                | "               | "                                | 12"               | Good                 | None            | "               | "         | "         | "                    | 1                        | 25                      | 3       | 75                        | "        | "                     |                             |
| Flax                      | 4                               | "               | "                | "               | "                                | "                 | Failure              | "               | "               | "         | "         | "                    | 0                        | 0                       | 4       | 100                       | "        | "                     |                             |
| Winter Vetch              | 4                               | "               | "                | "               | "                                | 24"               | Good                 | "               | "               | "         | "         | "                    | 4                        | 100                     | 0       | 0                         | "        | "                     |                             |
| Observation Number XXXIII |                                 |                 |                  |                 |                                  |                   |                      |                 |                 | Year—1938 |           | Lackawanna Loam      |                          |                         |         |                           |          |                       |                             |
| Buckwheat                 | 1                               | May 18          | Aug. 16          | Mix. 1          | 1700 Lime<br>240 Ferti-<br>lizer | "                 | Failure              | None            | "               | "         | "         | Wet                  | 0                        | 0                       | 1       | 100                       | Wallpack | Destroyed by deer     |                             |
| German Millet             | 1                               | "               | "                | "               | "                                | 42"               | Good                 | Med.            | 40%             | No        | No        | "                    | 1                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Minn. Sorghum             | 1                               | "               | "                | "               | "                                | 48"               | Fair                 | Sm.             | 10%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Greeley Kaffir            | 1                               | "               | "                | "               | "                                | 48"               | "                    | "               | 10%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     | Subjected to frost          |
| Sudan Grass               | 1                               | "               | "                | "               | "                                | 52"               | Good                 | "               | 15%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Soy Beans                 | 1                               | "               | "                | "               | "                                | 12"               | Fair                 | In Blossom      | 20%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Cow Peas                  | 1                               | "               | "                | "               | "                                | 18"               | "                    | "               | 25%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Rape                      | 1                               | "               | "                | "               | "                                | 18"               | Good                 | None            | "               | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Flax                      | 1                               | "               | "                | "               | "                                | 12"               | Fair                 | In Blossom      | 20%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Winter Vetch              | 1                               | "               | "                | "               | "                                | 18"               | "                    | None            | "               | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Observation Number XXXIV  |                                 |                 |                  |                 |                                  |                   |                      |                 |                 | Year—1939 |           | Wallpack Silt Loam   |                          |                         |         |                           |          |                       |                             |
| Buckwheat                 | 1                               | June 8          | Sept. 20         | Mix. 1          | 200 Ferti-<br>lizer              | 24"               | Good                 | Lg.             | 100%            | No        | Partly    | Dry                  | 0                        | 1                       | 100     | 0                         | 0        | Roy                   |                             |
| German Millet             | 1                               | "               | "                | "               | "                                | 48"               | "                    | Med.            | 80%             | "         | No        | "                    | 1                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Minn. Sorghum             | 1                               | "               | "                | "               | "                                | 60"               | "                    | "               | 50%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Greeley Kaffir            | 1                               | "               | "                | "               | "                                | 48"               | Fair                 | "               | 30%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     | Subjected to severe drought |
| Sudan Grass               | 1                               | "               | "                | "               | "                                | 78"               | Good                 | "               | 50%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Soy Beans                 | 1                               | "               | "                | "               | "                                | "                 | Failure              | "               | "               | "         | "         | "                    | 0                        | 0                       | 1       | 100                       | "        | "                     |                             |
| Cow Peas                  | 1                               | "               | "                | "               | "                                | 25"               | Good                 | "               | 70%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Rape                      | 1                               | "               | "                | "               | "                                | "                 | Failure              | "               | "               | "         | "         | "                    | 0                        | 0                       | 1       | 100                       | "        | "                     |                             |
| Flax                      | 1                               | "               | "                | "               | "                                | 20"               | Good                 | "               | 70%             | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |
| Winter Vetch              | 1                               | "               | "                | "               | "                                | 24"               | "                    | "               | "               | "         | "         | "                    | 0                        | 1                       | 100     | 0                         | 0        | "                     |                             |





| Plant                    | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment   | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged    | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract    | Remarks        |
|--------------------------|---------------------------------|-----------------|------------------|-----------------|---------------------|-------------------|----------------------|-----------------|-------------------|-----------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|----------|----------------|
| Observation Number XXXIX |                                 |                 |                  |                 |                     |                   |                      |                 |                   | Year—1939 |           |                   | Hoosic Loam              |                         |         |                           |         |          |                |
| Buckwheat                | 1                               | June 1          | Sept. 12         | Mix. 1          | 200 Ferti-<br>lizer |                   | Failure              |                 |                   |           |           | Dry               | 0                        | 0                       | 0       | 1                         | 100     | Wallpack |                |
| German Millet            | 1                               | "               | "                | "               | "                   | 48"               | Good                 | Med.            | 50%               | No        | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |                |
| Minn. Sorghum            | 1                               | "               | "                | "               | "                   | 72"               | "                    | "               | 40%               | "         | "         | "                 | 1                        | 1                       | 100     | 0                         | 0       | "        |                |
| Greeley Kaffir           | 1                               | "               | "                | "               | "                   | 60"               | Fair                 | "               | 30%               | "         | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        | Subjected to   |
| Sudan Grass              | 1                               | "               | "                | "               | "                   | 72"               | Good                 | "               | 50%               | "         | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        | severe drought |
| Soy Beans                | 1                               | "               | "                | "               | "                   | "                 | Failure              | "               |                   |           |           | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |                |
| Cow Peas                 | 1                               | "               | "                | "               | "                   | 12"               | Good                 | "               | 70%               | "         | "         | "                 | 0                        | 0                       | 0       | 1                         | 100     | "        |                |
| Rape                     | 1                               | "               | "                | "               | "                   | "                 | Failure              | "               |                   |           |           | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |                |
| Flax                     | 1                               | "               | "                | "               | "                   | 18"               | Fair                 | "               | 75%               | "         | "         | "                 | 0                        | 0                       | 0       | 1                         | 100     | "        |                |
| Winter Vetch             | 1                               | "               | "                | "               | "                   | "                 | Failure              | "               |                   |           |           | "                 | 0                        | 1                       | 100     | 0                         | 0       | "        |                |

|                       |   |        |          |        |                     |     |         |      |     |           |    |     |                      |   |     |   |     |          |                |
|-----------------------|---|--------|----------|--------|---------------------|-----|---------|------|-----|-----------|----|-----|----------------------|---|-----|---|-----|----------|----------------|
| Observation Number XL |   |        |          |        |                     |     |         |      |     | Year—1939 |    |     | Hoosic Gravelly Loam |   |     |   |     |          |                |
| Buckwheat             | 1 | June 1 | Sept. 12 | Mix. 1 | 200 Ferti-<br>lizer |     | Failure |      |     |           |    | Dry | 0                    | 0 | 0   | 1 | 100 | Wallpack |                |
| German Millet         | 1 | "      | "        | "      | "                   | 54" | Good    | Lg.  | 50% | No        | No | "   | 1                    | 1 | 100 | 0 | 0   | "        |                |
| Minn. Sorghum         | 1 | "      | "        | "      | "                   | 66" | "       | "    | 50% | "         | "  | "   | 0                    | 1 | 100 | 0 | 0   | "        |                |
| Greeley Kaffir        | 1 | "      | "        | "      | "                   | 60" | Fair    | Med. | 30% | "         | "  | "   | 0                    | 1 | 100 | 0 | 0   | "        | Subjected to   |
| Sudan Grass           | 1 | "      | "        | "      | "                   | 84" | Good    | Lg.  | 40% | "         | "  | "   | 0                    | 1 | 100 | 0 | 0   | "        | severe drought |
| Soy Beans             | 1 | "      | "        | "      | "                   | "   | Failure | "    |     |           |    | "   | 0                    | 0 | 0   | 1 | 100 | "        |                |
| Cow Peas              | 1 | "      | "        | "      | "                   | 20" | Good    | Med. | 50% | "         | "  | "   | 0                    | 1 | 100 | 0 | 0   | "        |                |
| Rape                  | 1 | "      | "        | "      | "                   | "   | Failure | "    |     |           |    | "   | 0                    | 0 | 0   | 1 | 100 | "        |                |
| Flax                  | 1 | "      | "        | "      | "                   | 24" | Good    | "    | 60% | "         | "  | "   | 0                    | 1 | 100 | 0 | 0   | "        |                |
| Winter Vetch          | 1 | "      | "        | "      | "                   | 24" | "       | "    |     |           |    | "   | 0                    | 1 | 100 | 0 | 0   | "        |                |

|                        |   |        |          |        |                     |     |         |      |     |           |    |     |             |   |    |   |     |     |                |
|------------------------|---|--------|----------|--------|---------------------|-----|---------|------|-----|-----------|----|-----|-------------|---|----|---|-----|-----|----------------|
| Observation Number XLI |   |        |          |        |                     |     |         |      |     | Year—1939 |    |     | Hoosic Loam |   |    |   |     |     |                |
| Buckwheat              | 4 | June 9 | Sept. 21 | Mix. 1 | 200 Ferti-<br>lizer | 24" | Fair    | Lg.  | 25% | No        | No | Dry | 0           | 1 | 25 | 3 | 75  | Roy |                |
| German Millet          | 4 | "      | "        | "      | "                   | 45" | Good    | Med. | 65% | "         | "  | "   | 3           | 3 | 75 | 1 | 25  | "   | Subjected to   |
| Minn. Sorghum          | 4 | "      | "        | "      | "                   | 60" | "       | "    | 60% | "         | "  | "   | 0           | 2 | 50 | 2 | 50  | "   | severe drought |
| Greeley Kaffir         | 4 | "      | "        | "      | "                   | 60" | "       | "    | 50% | "         | "  | "   | 0           | 1 | 25 | 3 | 75  | "   |                |
| Sudan Grass            | 4 | "      | "        | "      | "                   | 60" | "       | "    | 90% | "         | "  | "   | 0           | 2 | 50 | 2 | 50  | "   |                |
| Soy Beans              | 4 | "      | "        | "      | "                   | "   | Failure | "    |     |           |    | "   | 0           | 0 | 0  | 4 | 100 | "   |                |
| Cow Peas               | 4 | "      | "        | "      | "                   | 20" | Good    | "    | 75% | "         | "  | "   | 0           | 1 | 25 | 3 | 75  | "   |                |
| Rape                   | 4 | "      | "        | "      | "                   | "   | Failure | "    |     |           |    | "   | 0           | 0 | 0  | 4 | 25  | "   |                |
| Flax                   | 4 | "      | "        | "      | "                   | 22" | Good    | "    | 50% | "         | "  | "   | 0           | 3 | 75 | 1 | 25  | "   |                |
| Winter Vetch           | 4 | "      | "        | "      | "                   | 25" | "       | None |     |           |    | "   | 0           | 3 | 75 | 1 | 25  | "   |                |

During the interval of 1936 to 1939 inclusive, a total of 41 observations was made on 95 food patches. These patches, approximating one-half acre in size, were located on 24 soil types within the Appalachian Valley Region.

#### 1936 Season:

In 1936 a total of 14 observational areas, containing 31 food patches, was planted. No lime or fertilizer was used and inasmuch as the locations of the patches were confined to abandoned farmlands of the region, the legumes were not inoculated. The patches produced a fair amount of food and were heavily utilized by wildlife. The legumes failed generally to produce. Seven soil types were represented.

The planting interval was from June 16 to June 27, with those patches planted earliest giving the better performance. The precipitation was below normal and the season was regarded as being dry.

#### 1937 Season:

In 1937 a total of 12 observational areas, comprising 35 food patches, was planted. No lime or fertilizer was used. Legumes were inoculated. Seven soil types were represented.

The planting interval was from May 15 to June 4. Precipitation was normal and no late frosts were encountered.

Patches planted on the same plot as 1936 plantings failed to produce. Patches planted on new locations were much improved over the 1936 efforts.

#### 1938 Season:

In 1938 seven observational areas were set up containing a total of 14 food patches. Five soil types were represented. Lime and fertilizer was used.

The planting interval was early, being from May 11 to May 18. Precipitation was above normal.

All plantings were injured by a late frost and production of food was generally unsatisfactory.

#### 1939 Season:

In 1939 eight observational areas were chosen and a total of 15 patches planted. All patches were fertilized and four were treated with ground limestone. Five soil types were represented.

The planting period was from June 1 to June 16. Despite a period of severe drought wherein precipitation was 50% below normal and temperatures decidedly above normal, 12 of the 15 patches produced a good food supply.

It is recommended in that portion of New Jersey comprising the Appalachian Valley Region and the Upper Highland Region incorporating the counties of Sussex, northern Warren, Passaic, northern Morris and northern Bergen, that the number one food patch mixture be planted during the interval of June 1 to June 15. All legumes must be inoculated and seed bed treated with fertilizer. Satisfactory food production can be attained consistently if a new food patch location is chosen yearly.

# CHART NUMBER II — PIEDMONT PLAIN REGION

KEY TO ABBREVIATIONS: Mix.—Mixture; Med.—Medium; Excel.—Excellent; Lg.—Large; Sm.—Small; Norm.—Normal; Gd.—Good

| Plant                | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged               | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract   | Remarks |
|----------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|----------------------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|---------|---------|
| Observation Number I |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Year—1937            |           |                   |                          |                         |         |                           |         |         |         |
|                      |                                 |                 |                  |                 |                   |                   |                      |                 |                   | Hagerstown Silt Loam |           |                   |                          |                         |         |                           |         |         |         |
| Buckwheat            | 32                              | May 3           | Aug. 5           | Mix. 1          | None              | 30"               | Good                 | Med. Lg.        | 94%               | No                   | No        | Norm.             | 6                        | 31                      | 97      | 1                         | 3       | Clinton |         |
| German Millet        | 32                              | "               | "                | "               | "                 | 36"               | "                    | "               | 71%               | "                    | "         | "                 | 2                        | 25                      | 78      | 7                         | 22      | "       |         |
| Minn. Sorghum        | 32                              | "               | "                | "               | "                 | 63"               | Fair                 | " Smut          | 70%               | "                    | "         | "                 | 3                        | 30                      | 94      | 2                         | 6       | "       |         |
| Proso                | 32                              | "               | "                | "               | "                 | 35"               | Good                 | "               | 71%               | "                    | "         | "                 | 0                        | 13                      | 41      | 19                        | 59      | "       |         |
| Greeley Kaffir       | 32                              | "               | "                | "               | "                 | 60"               | "                    | "               | 72%               | "                    | "         | "                 | 0                        | 30                      | 94      | 2                         | 6       | "       |         |
| Sudan Grass          | 32                              | "               | "                | "               | "                 | 66"               | "                    | " Lg. "         | 73%               | "                    | "         | "                 | 0                        | 30                      | 94      | 2                         | 6       | "       |         |
| Soy Beans            | 32                              | "               | "                | "               | "                 | 17"               | Fair                 | Sm.             | 55%               | "                    | "         | "                 | 0                        | 32                      | 100     | 0                         | 0       | "       |         |
| Cow Peas             | 32                              | "               | "                | "               | "                 | 18"               | "                    | "               | 50%               | "                    | "         | "                 | 0                        | 32                      | 100     | 0                         | 0       | "       |         |
| Rape                 | 32                              | "               | "                | "               | "                 | 11"               | "                    | None            | "                 | "                    | "         | "                 | 0                        | 29                      | 90      | 3                         | 10      | "       |         |
| Flax                 | 32                              | "               | "                | "               | "                 | 22"               | Good                 | Med.            | 78%               | "                    | "         | "                 | 11                       | 29                      | 90      | 3                         | 10      | "       |         |
| Winter Vetch         | 32                              | "               | "                | "               | "                 | 24"               | Fair                 | None            | "                 | "                    | "         | "                 | 0                        | 27                      | 84      | 5                         | 16      | "       |         |

|                       |    |        |          |        |                     |     |        |          |      |                      |    |     |   |    |     |    |    |         |  |
|-----------------------|----|--------|----------|--------|---------------------|-----|--------|----------|------|----------------------|----|-----|---|----|-----|----|----|---------|--|
| Observation Number II |    |        |          |        |                     |     |        |          |      | Year—1938            |    |     |   |    |     |    |    |         |  |
|                       |    |        |          |        |                     |     |        |          |      | Hagerstown Silt Loam |    |     |   |    |     |    |    |         |  |
| Buckwheat             | 17 | June 1 | Sept. 10 | Mix. 1 | 250 Ferti-<br>lizer | 32" | Good   | Med.     | 100% | No                   | No | Wet | 0 | 10 | 59  | 7  | 41 | Clinton |  |
| German Millet         | 17 | "      | "        | "      | "                   | 39" | "      | "        | 90%  | "                    | "  | "   | 1 | 16 | 94  | 1  | 6  | "       |  |
| Minn. Sorghum         | 17 | "      | "        | "      | "                   | 89" | "      | Lg.      | 91%  | "                    | "  | "   | 5 | 17 | 100 | 0  | 0  | "       |  |
| Golden Millet         | 17 | "      | "        | "      | "                   | 56" | "      | "        | 93%  | "                    | "  | "   | 0 | 7  | 41  | 10 | 59 | "       |  |
| Sorghum               | 17 | "      | "        | "      | "                   | 92" | Excel. | "        | 91%  | "                    | "  | "   | 3 | 13 | 77  | 4  | 23 | "       |  |
| Greeley Kaffir        | 17 | "      | "        | "      | "                   | 65" | Good   | Med. Lg. | 92%  | "                    | "  | "   | 2 | 17 | 100 | 0  | 0  | "       |  |
| Sudan Grass           | 17 | "      | "        | "      | "                   | 70" | "      | Med.     | 94%  | "                    | "  | "   | 0 | 17 | 100 | 0  | 0  | "       |  |
| Soy Beans             | 17 | "      | "        | "      | "                   | 23" | Poor   | Sm.      | 88%  | "                    | "  | "   | 0 | 6  | 35  | 11 | 65 | "       |  |
| Cow Peas              | 17 | "      | "        | "      | "                   | 38" | Fair   | Med.     | 76%  | "                    | "  | "   | 0 | 17 | 100 | 0  | 0  | "       |  |
| Rape                  | 17 | "      | "        | "      | "                   | 12" | Poor   | None     | "    | "                    | "  | "   | 0 | 9  | 53  | 8  | 47 | "       |  |
| Flax                  | 17 | "      | "        | "      | "                   | 22" | Fair   | Med.     | 92%  | "                    | "  | "   | 0 | 7  | 41  | 10 | 59 | "       |  |
| Winter Vetch          | 17 | "      | "        | "      | "                   | 23" | Poor   | None     | "    | "                    | "  | "   | 0 | 3  | 18  | 14 | 82 | "       |  |

# Observation Number III

Year—1939

Hagerstown Silt Loam

|                |    |        |          |        |                     |     |         |          |      |    |        |     |   |    |     |     |    |         |
|----------------|----|--------|----------|--------|---------------------|-----|---------|----------|------|----|--------|-----|---|----|-----|-----|----|---------|
| Buckwheat      | 28 | May 12 | Sept. 21 | Mix. 2 | 150 Ferti-<br>lizer | 30" | Good    | Med. Lg. | 99%  | No | Partly | Dry | 0 | 12 | 43  | 16  | 57 | Clinton |
| German Millet  | 28 | "      | "        | "      | "                   | 44" | "       | "        | 99%  | "  | No     | "   | 0 | 27 | 96  | 1   | 4  | "       |
| Minn. Sorghum  | 28 | "      | "        | "      | "                   | 68" | "       | "        | 100% | "  | "      | "   | 2 | 28 | 100 | 0   | 0  | "       |
| Greeley Kaffir | 28 | "      | "        | "      | "                   | 40" | "       | Sm.      | 99%  | "  | "      | "   | 0 | 27 | 96  | 1   | 4  | "       |
| Sudan Grass    | 28 | "      | "        | "      | "                   | 57" | "       | "        | 95%  | "  | "      | "   | 0 | 28 | 100 | 0   | 0  | "       |
| Soy Beans      | 28 | "      | "        | "      | "                   | "   | Failure | "        | "    | "  | "      | "   | 0 | 0  | 28  | 100 | "  | "       |
| Cow Peas       | 28 | "      | "        | "      | "                   | 21" | Good    | "        | 96%  | "  | "      | "   | 0 | 14 | 50  | 14  | 50 | "       |
| Rape           | 28 | "      | "        | "      | "                   | 13" | "       | "        | "    | "  | "      | "   | 0 | 20 | 71  | 8   | 29 | "       |
| Dwarf Milo     | 28 | "      | "        | "      | "                   | 36" | "       | "        | 97%  | "  | "      | "   | 0 | 26 | 93  | 2   | 7  | "       |
| Flax           | 28 | "      | "        | "      | "                   | 23" | "       | "        | 96%  | "  | "      | "   | 0 | 24 | 86  | 4   | 14 | "       |
| Winter Vetch   | 28 | "      | "        | "      | "                   | 37" | "       | "        | "    | "  | "      | "   | 0 | 6  | 22  | 22  | 78 | "       |

# Observation Number IV

Year—1939

Hagerstown Silt Loam

| 150 Ferti-     |    |        |          |        |       |     |         |          |      |    |     |     |   |    |     |    |     |         |
|----------------|----|--------|----------|--------|-------|-----|---------|----------|------|----|-----|-----|---|----|-----|----|-----|---------|
| Buckwheat      | 16 | May 12 | Sept. 18 | Mix. 1 | lizer | 28" | Good    | Med. Lg. | 100% | No | Yes | Dry | 0 | 10 | 62  | 6  | 38  | Clinton |
| German Millet  | 16 | "      | "        | "      | "     | 40" | "       | "        | 98%  | "  | No  | "   | 1 | 16 | 100 | 0  | 0   | "       |
| Minn. Sorghum  | 16 | "      | "        | "      | "     | 54" | "       | Sm.      | 99%  | "  | "   | "   | 0 | 15 | 94  | 1  | 6   | "       |
| Greeley Kaffir | 16 | "      | "        | "      | "     | 34" | Fair    | "        | 100% | "  | "   | "   | 0 | 16 | 100 | 0  | 0   | "       |
| Sudan Grass    | 16 | "      | "        | "      | "     | 58" | Good    | "        | 98%  | "  | "   | "   | 0 | 16 | 100 | 0  | 0   | "       |
| Soy Beans      | 16 | "      | "        | "      | "     | "   | Failure | "        | "    | "  | "   | "   | 0 | 0  | 0   | 16 | 100 | "       |
| Cow Peas       | 16 | "      | "        | "      | "     | 20" | Good    | "        | 96%  | "  | "   | "   | 0 | 14 | 88  | 2  | 12  | "       |
| Rape           | 16 | "      | "        | "      | "     | 12" | Good    | "        | "    | "  | "   | "   | 0 | 14 | 88  | 2  | 12  | "       |
| Flax           | 16 | "      | "        | "      | "     | 21" | Good    | "        | 97%  | "  | "   | "   | 0 | 14 | 88  | 2  | 12  | "       |
| Winter Vetch   | 16 | "      | "        | "      | "     | 27" | Good    | "        | "    | "  | "   | "   | 0 | 6  | 38  | 10 | 62  | "       |

During the years 1937, 1938, and 1939, a total of four observations was maintained on a total of 93 patches. The food patches approximated one half acre in size and were located on a single soil type.

In 1937 a total of 32 food plots was observed. No lime or fertilizer was utilized. The planting date was May 3 and food production was generally satisfactory during a normal growing season.

In 1938 a total of 17 food plots was observed. Fertilizer was applied at a rate of 250 lb. per acre. The planting date was June 1 followed by precipitation that was above normal. General patch development was excellent and the food production was ample.

In 1939 a total of 44 patches was observed. Fertilizer was applied at the rate of 150 lb. per acre. The planting date was May 12 followed by a normal growing season during which precipitation was decidedly below normal. The general development of the patches was adequate and the food supply was ample.

It is recommended that the portion of New Jersey comprising the lower Highland Region and the Piedmont Plain Region, comprising the counties of Hunterdon, Somerset, Middlesex, southern Warren, southern Morris, and southern Bergen, be planted during the interval represented by May 15 to June 25. All legumes must be inoculated and it is recommended that the seed bed receive an application of fertilizer.



# CHART NUMBER III — COASTAL PLAIN REGION

KEY TO ABBREVIATIONS: Mix.—Mixture; Med.—Medium; Excel.—Excellent; Lg.—Large; Sm.—Small; Norm.—Normal; Gd.—Good

| Plant                  | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                   | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract      | Remarks        |
|------------------------|---------------------------------|-----------------|------------------|-----------------|-------------------------------------|-------------------|----------------------|-----------------|-------------------|--------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|------------|----------------|
| Observation Number I   |                                 |                 |                  |                 |                                     |                   |                      |                 | Year—1936         |        |           |                   |                          |                         |         |                           |         |            | Sassafras Sand |
| Buckwheat              | 3                               | May 7           | Oct. 20          | Mix. 1          | 1 T. Lime<br>250 lbs.<br>Fertilizer | 28"               | Good                 | Med.            | 100%              | Yes    | Partly    | Wet               | 0                        | 3                       | 100     | 0                         | 0       | Haleyville |                |
| German Millet          | 3                               | "               | "                | "               | "                                   | 36"               | "                    | "               | 100%              | "      | "         | "                 | 1                        | 3                       | 100     | 0                         | 0       | "          |                |
| Minn. Sorghum          | 3                               | "               | "                | "               | "                                   | 40"               | Fair                 | Sm.             | 100%              | "      | No        | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |                |
| Proso                  | 3                               | "               | "                | "               | "                                   | "                 | Failure              | None            | "                 | "      | "         | "                 | 0                        | 0                       | 0       | 3                         | 100     | "          |                |
| Greeley Kaffir         | 3                               | "               | "                | "               | "                                   | 26"               | Fair                 | Med.            | 65%               | No     | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |                |
| Sudan Grass            | 3                               | "               | "                | "               | "                                   | "                 | Failure              | None            | "                 | "      | "         | "                 | 0                        | 0                       | 0       | 3                         | 100     | "          |                |
| Soy Beans              | 3                               | "               | "                | "               | "                                   | 11"               | Good                 | Med.            | 100%              | "      | "         | "                 | 0                        | 2                       | 67      | 1                         | 33      | "          |                |
| Cow Peas               | 3                               | "               | "                | "               | "                                   | 15"               | Good                 | Lg.             | 75%               | Yes    | "         | "                 | 1                        | 3                       | 100     | 0                         | 0       | "          |                |
| Rape                   | 3                               | "               | "                | "               | "                                   | 10"               | Good                 | None            | "                 | No     | "         | "                 | 0                        | 2                       | 67      | 1                         | 33      | "          |                |
| Flax                   | 3                               | "               | "                | "               | "                                   | "                 | Failure              | None            | "                 | "      | "         | "                 | 0                        | 0                       | 0       | 3                         | 100     | "          |                |
| Winter Vetch           | 3                               | "               | "                | "               | "                                   | "                 | "                    | "               | "                 | "      | "         | "                 | 0                        | 0                       | 0       | 3                         | 100     | "          |                |
| Observation Number II  |                                 |                 |                  |                 |                                     |                   |                      |                 | Year—1936         |        |           |                   |                          |                         |         |                           |         |            | Sassafras Sand |
| Buckwheat              | 6                               | May 24          | Oct. 25          | Mix. 1          | 1000 Lime<br>200 Ferti-<br>lizer    | 16"               | Fair                 | Med.            | 100%              | Yes    | Yes       | Norm.             | 0                        | 4                       | 67      | 2                         | 33      | Manahawkin |                |
| German Millet          | 6                               | "               | "                | "               | "                                   | 24"               | "                    | Sm.             | 100%              | "      | No        | "                 | 5                        | 6                       | 100     | 0                         | 0       | "          |                |
| Minn. Sorghum          | 6                               | "               | "                | "               | "                                   | 36"               | "                    | "               | 100%              | Partly | "         | "                 | 1                        | 5                       | 83      | 1                         | 17      | "          |                |
| Proso                  | 6                               | "               | "                | "               | "                                   | 20"               | "                    | "               | 100%              | Yes    | Yes       | "                 | 0                        | 4                       | 67      | 2                         | 33      | "          |                |
| Greeley Kaffir         | 6                               | "               | "                | "               | "                                   | 34"               | "                    | Sm. Sm.         | 70%               | No     | No        | "                 | 0                        | 5                       | 83      | 1                         | 17      | "          |                |
| Sudan Grass            | 6                               | "               | "                | "               | "                                   | 36"               | "                    | Sm.             | 100%              | "      | "         | "                 | 0                        | 2                       | 33      | 4                         | 67      | "          |                |
| Soy Beans              | 6                               | "               | "                | "               | "                                   | "                 | Failure              | None            | "                 | "      | "         | "                 | 0                        | 0                       | 0       | 6                         | 100     | "          |                |
| Cow Peas               | 6                               | "               | "                | "               | "                                   | 14"               | Fair                 | Sm.             | 50%               | Yes    | No        | "                 | 0                        | 2                       | 33      | 4                         | 67      | "          |                |
| Rape                   | 6                               | "               | "                | "               | "                                   | 10"               | "                    | None            | "                 | No     | "         | "                 | 0                        | 5                       | 83      | 1                         | 17      | "          |                |
| Flax                   | 6                               | "               | "                | "               | "                                   | 14"               | "                    | Med.            | 50%               | "      | "         | "                 | 0                        | 1                       | 17      | 5                         | 83      | "          |                |
| Winter Vetch           | 6                               | "               | "                | "               | "                                   | 18"               | "                    | None            | "                 | "      | "         | "                 | 2                        | 33                      | 4       | 67                        | "       | "          |                |
| Observation Number III |                                 |                 |                  |                 |                                     |                   |                      |                 | Year—1936         |        |           |                   |                          |                         |         |                           |         |            | Sassafras Sand |
| Buckwheat              | 8                               | May 19          | Oct. 20          | Mix. 1          | 1000 Lime<br>200 Ferti-<br>lizer    | 30"               | Good                 | Med. Lg.        | 100%              | Yes    | Yes       | Norm.             | 1                        | 8                       | 100     | 0                         | 0       | Tuckahoe   |                |
| German Millet          | 8                               | "               | "                | "               | "                                   | 42"               | "                    | "               | 100%              | Partly | Partly    | "                 | 6                        | 8                       | 100     | 0                         | 0       | "          |                |
| Minn. Sorghum          | 8                               | "               | "                | "               | "                                   | 46"               | "                    | Sm.             | 85%               | "      | No        | "                 | 1                        | 8                       | 100     | 0                         | 0       | "          |                |
| Proso                  | 8                               | "               | "                | "               | "                                   | 33"               | "                    | "               | 100%              | Yes    | Yes       | "                 | 0                        | 8                       | 100     | 0                         | 0       | "          |                |
| Greeley Kaffir         | 8                               | "               | "                | "               | "                                   | 54"               | "                    | "               | 70%               | No     | No        | "                 | 0                        | 8                       | 100     | 0                         | 0       | "          |                |
| Sudan Grass            | 8                               | "               | "                | "               | "                                   | 58"               | "                    | "               | 100%              | Partly | "         | "                 | 0                        | 8                       | 100     | 0                         | 0       | "          |                |
| Soy Beans              | 8                               | "               | "                | "               | "                                   | 24"               | "                    | "               | 75%               | "      | Partly    | "                 | 0                        | 3                       | 38      | 5                         | 62      | "          |                |
| Cow Peas               | 8                               | "               | "                | "               | "                                   | 18"               | "                    | "               | 85%               | No     | "         | "                 | 0                        | 4                       | 50      | 4                         | 50      | "          |                |
| Rape                   | 8                               | "               | "                | "               | "                                   | 13"               | "                    | None            | "                 | "      | "         | "                 | 0                        | 8                       | 100     | 0                         | 0       | "          |                |
| Flax                   | 8                               | "               | "                | "               | "                                   | "                 | Failure              | "               | "                 | "      | "         | "                 | 0                        | 0                       | 0       | 8                         | 100     | "          |                |
| Winter Vetch           | 8                               | "               | "                | "               | "                                   | 12"               | Fair                 | None            | "                 | "      | "         | "                 | 0                        | 2                       | 25      | 6                         | 75      | "          |                |

| Plant                 | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged    | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract    | Remarks |
|-----------------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|-----------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|----------|---------|
| Observation Number IV |                                 |                 |                  |                 |                                  |                   |                      |                 |                   | Year—1936 |           |                   | Sassafras Loamy Sand     |                         |         |                           |         |          |         |
|                       |                                 |                 |                  |                 | 1000 Lime<br>200 Ferti-<br>lizer |                   |                      |                 |                   |           |           |                   |                          |                         |         |                           |         |          |         |
| Buckwheat             | 5                               | May 20          | Oct. 20          | Mix. 1          |                                  | 26"               | Good                 | Med.            | 100%              | Yes       | Yes       | Norm.             | 0                        | 5                       | 100     | 0                         | 0       | Tuckahoe |         |
| German Millet         | 5                               | "               | "                | "               | "                                | 46"               | Excel.               | " Lg.           | 100%              | "         | No        | "                 | 1                        | 5                       | 100     | 0                         | 0       | "        |         |
| Minn. Sorghum         | 5                               | "               | "                | "               | "                                | 58"               | Good                 | "               | 95%               | Partly    | "         | "                 | 1                        | 5                       | 100     | 0                         | 0       | "        |         |
| Proso                 | 5                               | "               | "                | "               | "                                | 38"               | "                    | "               | 100%              | Yes       | Yes       | "                 | 0                        | 5                       | 100     | 0                         | 0       | "        |         |
| Greeley Kaffir        | 5                               | "               | "                | "               | "                                | 62"               | "                    | "               | 75%               | No        | No        | "                 | 1                        | 5                       | 100     | 0                         | 0       | "        |         |
| Sudan Grass           | 5                               | "               | "                | "               | "                                | 63"               | "                    | "               | 100%              | Partly    | No        | "                 | 0                        | 5                       | 100     | 0                         | 0       | "        |         |
| Soy Beans             | 5                               | "               | "                | "               | "                                |                   | Failure              | None            |                   |           |           | "                 | 0                        | 0                       | 0       | 5                         | 100     | "        |         |
| Cow Peas              | 5                               | "               | "                | "               | "                                | 24"               | Good                 | Med. Lg.        | 70%               | No        | No        | "                 | 0                        | 4                       | 80      | 1                         | 20      | "        |         |
| Rape                  | 5                               | "               | "                | "               | "                                | 12"               | "                    | None            |                   | "         | "         | "                 | 0                        | 5                       | 100     | 0                         | 0       | "        |         |
| Flax                  | 5                               | "               | "                | "               | "                                |                   | Failure              | "               |                   | "         | "         | "                 | 0                        | 0                       | 0       | 5                         | 100     | "        |         |
| Winter Vetch          | 5                               | "               | "                | "               | "                                |                   | "                    | "               |                   | "         | "         | "                 | 0                        | 0                       | 0       | 5                         | 100     | "        |         |

| Observation Number V |        |        |          |        |                                  |        |           |      |          | Year—1936 |           |         |           |            | Sassafras Sandy Loam |              |         |  |  |  |  |  |  |  |  |  | Tract | Remarks |  |  |  |  |  |  |  |          |               |
|----------------------|--------|--------|----------|--------|----------------------------------|--------|-----------|------|----------|-----------|-----------|---------|-----------|------------|----------------------|--------------|---------|--|--|--|--|--|--|--|--|--|-------|---------|--|--|--|--|--|--|--|----------|---------------|
| Plant                | Number | Date   | Observed | Seed   | Soil                             | Height | Condition | Seed | Discolor | Lodged    | Shattered | Growing | No. Times | Successful | Percent              | Unsuccessful | Percent |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  |          |               |
| Buckwheat            | 1      | May 20 | Oct. 16  | Mix. 1 | 1000 Lime<br>200 Ferti-<br>lizer | 18"    | Good      | Med. | 100%     | Yes       | Yes       | Norm.   | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | Tuckahoe |               |
| German Millet        | 1      | "      | "        | "      | "                                | 48"    | "         | "    | 100%     | "         | Partly    | "       | 1         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Minn. Sorghum        | 1      | "      | "        | "      | "                                | 60"    | "         | Sm.  | 90%      | "         | No        | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Proso                | 1      | "      | "        | "      | "                                | 30"    | "         | Med. | 100%     | "         | Yes       | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Greeley Kaffir       | 1      | "      | "        | "      | "                                | 48"    | "         | Sm.  | 75%      | No        | No        | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Sudan Grass          | 1      | "      | "        | "      | "                                | 72"    | "         | Med. | 100%     | Yes       | "         | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Soy Beans            | 1      | "      | "        | "      | "                                | "      | Failure   | None | "        | "         | "         | "       | 0         | 0          | 0                    | 1            | 100     |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        | Eaten by deer |
| Cow Peas             | 1      | "      | "        | "      | "                                | 24"    | Fair      | Med. | 25%      | No        | "         | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Rape                 | 1      | "      | "        | "      | "                                | 12"    | Good      | None | "        | "         | "         | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Flax                 | 1      | "      | "        | "      | "                                | 24"    | "         | Med. | 100%     | "         | "         | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |
| Winter Vetch         | 1      | "      | "        | "      | "                                | 12"    | Fair      | None | "        | "         | "         | "       | 0         | 1          | 100                  | 0            | 0       |  |  |  |  |  |  |  |  |  |       |         |  |  |  |  |  |  |  | "        |               |

| Observation Number VI |    |        |        |        |                                  |     |         |             |     | Year—1937 |    |     |   |    |     | Sassafras Sand |     |          |  |  |  |
|-----------------------|----|--------|--------|--------|----------------------------------|-----|---------|-------------|-----|-----------|----|-----|---|----|-----|----------------|-----|----------|--|--|--|
|                       |    |        |        |        | 1000 Lime<br>200 Ferti-<br>lizer | 30" | Good    | Med.        | 75% | No        | No | Dry | 1 | 10 | 100 | 0              | 0   | Tuckahoe |  |  |  |
| Buckwheat             | 10 | June 1 | Oct. 8 | Mix. 1 |                                  | 40" | "       | "           | 60% | "         | "  | "   | 9 | 10 | 100 | 0              | 0   | "        |  |  |  |
| German Millet         | 10 | "      | "      | "      | "                                | 56" | "       | Scarce Med. | 50% | "         | "  | "   | 0 | 10 | 100 | 0              | 0   | "        |  |  |  |
| Minn. Sorghum         | 10 | "      | "      | "      | "                                | 36" | "       | Med.        | 85% | "         | "  | "   | 0 | 3  | 30  | 7              | 70  | "        |  |  |  |
| Proso                 | 10 | "      | "      | "      | "                                | 50" | Fair    | Sm.         | 50% | "         | "  | "   | 0 | 2  | 20  | 8              | 80  | "        |  |  |  |
| Greeley Kaffir        | 10 | "      | "      | "      | "                                | 60" | "       | "           | 65% | "         | "  | "   | 0 | 10 | 100 | 0              | 0   | "        |  |  |  |
| Sudan Grass           | 10 | "      | "      | "      | "                                | 14" | "       | In Blossom  | "   | "         | "  | "   | 0 | 5  | 50  | 5              | 50  | "        |  |  |  |
| Soy Beans             | 10 | "      | "      | "      | "                                | 15" | Good    | "           | "   | "         | "  | "   | 0 | 9  | 90  | 1              | 10  | "        |  |  |  |
| Cow Peas              | 10 | "      | "      | "      | "                                | 10" | "       | None        | "   | "         | "  | "   | 0 | 10 | 100 | 0              | 0   | "        |  |  |  |
| Rape                  | 10 | "      | "      | "      | "                                | 14" | Fair    | Scarce Med. | 65% | "         | "  | "   | 0 | 8  | 80  | 2              | 20  | "        |  |  |  |
| Flax                  | 10 | "      | "      | "      | "                                |     | Failure | None        | "   | "         | "  | "   | 0 | 0  | 0   | 10             | 100 | "        |  |  |  |
| Winter Vetch          | 10 | "      | "      | "      | "                                |     |         |             |     |           |    |     |   |    |     |                |     |          |  |  |  |

# Observation Number VII

|                | 2 | May 29 | Oct. 12 | Mix. 1 | 200 Ferti-<br>lizer | 33" | Good    | Med. Lg.   |
|----------------|---|--------|---------|--------|---------------------|-----|---------|------------|
| Buckwheat      | 2 | "      | "       | "      | "                   | 50" | "       | "          |
| German Millet  | 2 | "      | "       | "      | "                   | 68" | "       | "          |
| Minn. Sorghum  | 2 | "      | "       | "      | "                   | 48" | "       | "          |
| Proso          | 2 | "      | "       | "      | "                   | "   | Failure | None       |
| Greeley Kaffir | 2 | "      | "       | "      | "                   | 75" | Good    | Med.       |
| Sudan Grass    | 2 | "      | "       | "      | "                   | 18" | Fair    | Sm.        |
| Soy Beans      | 2 | "      | "       | "      | "                   | 14" | Good    | In Blossom |
| Cow Peas       | 2 | "      | "       | "      | "                   | 10" | "       | None       |
| Rape           | 2 | "      | "       | "      | "                   | 14" | Fair    | Med. Sm.   |
| Flax           | 2 | "      | "       | "      | "                   | "   | Failure | None       |
| Winter Vetch   | 2 | "      | "       | "      | "                   | "   | "       | "          |

# Year—1937

|   | 75% | No | No |
|---|-----|----|----|
| " | 65% | "  | "  |
| " | 65% | "  | "  |
| " | 90% | "  | "  |
| " | 70% | "  | "  |
| " | 65% | "  | "  |
| " | "   | "  | "  |
| " | "   | "  | "  |
| " | 70% | "  | "  |

# Sassafras Sand

|   | 0 | 2 | 100 | 0   | 0  | Tuckahoe |
|---|---|---|-----|-----|----|----------|
| " | 1 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 0 | 2   | 100 | "  | "        |
| " | 0 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 1 | 50  | 1   | 50 | "        |
| " | 0 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 2 | 100 | 0   | 0  | "        |
| " | 0 | 0 | 2   | 100 | "  | "        |

# Observation Number VIII

|                | 2 | May 25 | Oct. 21 | Mix. 1 | 1000 Lime<br>250 Ferti-<br>lizer | 30" | Good    | Med. |
|----------------|---|--------|---------|--------|----------------------------------|-----|---------|------|
| Buckwheat      | 2 | "      | "       | "      | "                                | 42" | Good    | "    |
| German Millet  | 2 | "      | "       | "      | "                                | 48" | Fair    | "    |
| Minn. Sorghum  | 2 | "      | "       | "      | "                                | "   | Failure | None |
| Proso          | 2 | "      | "       | "      | "                                | 42" | Fair    | Med. |
| Greeley Kaffir | 2 | "      | "       | "      | "                                | 48" | Fair    | Sm.  |
| Sudan Grass    | 2 | "      | "       | "      | "                                | "   | Failure | None |
| Soy Beans      | 2 | "      | "       | "      | "                                | 18" | Fair    | Med. |
| Cow Peas       | 2 | "      | "       | "      | "                                | 12" | Good    | None |
| Rape           | 2 | "      | "       | "      | "                                | 24" | Fair    | Sm.  |
| Flax           | 2 | "      | "       | "      | "                                | 12" | Fair    | None |
| Winter Vetch   | 2 | "      | "       | "      | "                                | "   | "       | "    |

# Year—1937

|   | 100% | Partly | Partly |
|---|------|--------|--------|
| " | 100% | "      | No     |
| " | 100% | Yes    | "      |
| " | 90%  | Partly | "      |
| " | 100% | Yes    | "      |
| " | 100% | Partly | "      |
| " | "    | No     | "      |
| " | 100% | Partly | "      |
| " | "    | No     | "      |
| " | 100% | Partly | "      |
| " | "    | No     | "      |

# Portsmouth Loam

|   | 0 | 2 | 100 | 0   | 0  | Glassboro |
|---|---|---|-----|-----|----|-----------|
| " | 1 | 2 | 100 | 0   | 0  | "         |
| " | 0 | 2 | 100 | 0   | 0  | "         |
| " | 0 | 0 | 2   | 100 | "  | "         |
| " | 0 | 2 | 100 | 0   | 0  | "         |
| " | 0 | 1 | 50  | 1   | 50 | "         |
| " | 0 | 0 | 2   | 100 | "  | "         |
| " | 0 | 2 | 100 | 0   | 0  | "         |
| " | 0 | 2 | 100 | 0   | 0  | "         |
| " | 0 | 1 | 50  | 1   | 50 | "         |
| " | 0 | 2 | 100 | 0   | 0  | "         |

# 63 Observation Number IX

|                | 9 | May 25 | Oct. 20 | Mix. 1 | 1000 Lime<br>250 Ferti-<br>lizer | 28" | Good    | Med. |
|----------------|---|--------|---------|--------|----------------------------------|-----|---------|------|
| Buckwheat      | 9 | "      | "       | "      | "                                | 36" | "       | "    |
| German Millet  | 9 | "      | "       | "      | "                                | 50" | "       | "    |
| Minn. Sorghum  | 9 | "      | "       | "      | "                                | "   | Failure | None |
| Proso          | 9 | "      | "       | "      | "                                | 52" | Good    | Med. |
| Greeley Kaffir | 9 | "      | "       | "      | "                                | 52" | "       | "    |
| Sudan Grass    | 9 | "      | "       | "      | "                                | 15" | "       | "    |
| Soy Beans      | 9 | "      | "       | "      | "                                | 18" | "       | "    |
| Cow Peas       | 9 | "      | "       | "      | "                                | 10" | Fair    | None |
| Rape           | 9 | "      | "       | "      | "                                | 21" | Good    | Med. |
| Flax           | 9 | "      | "       | "      | "                                | 16" | "       | None |
| Winter Vetch   | 9 | "      | "       | "      | "                                | "   | "       | "    |

# Year—1937

|   | 100% | Partly | Partly |
|---|------|--------|--------|
| " | 100% | "      | No     |
| " | 100% | "      | Partly |
| " | 90%  | "      | No     |
| " | 100% | "      | Partly |
| " | 100% | No     | No     |
| " | 80%  | Partly | No     |
| " | "    | No     | No     |
| " | 80%  | No     | No     |

# Sassafras Sandy Loam

|   | 0 | 8 | 89  | 1   | 11 | Glassboro |
|---|---|---|-----|-----|----|-----------|
| " | 3 | 7 | 78  | 2   | 22 | "         |
| " | 1 | 9 | 100 | 0   | 0  | "         |
| " | 0 | 0 | 9   | 100 | "  | "         |
| " | 1 | 9 | 100 | 0   | 0  | "         |
| " | 0 | 8 | 89  | 1   | 11 | "         |
| " | 0 | 5 | 56  | 4   | 44 | "         |
| " | 0 | 6 | 66  | 3   | 34 | "         |
| " | 0 | 9 | 100 | 0   | 0  | "         |
| " | 0 | 8 | 89  | 1   | 11 | "         |
| " | 0 | 7 | 78  | 2   | 22 | "         |

# Observation Number X

|                | 4 | June 3 | Aug. 12 | Mix. 1 | 1000 Lime<br>200 Ferti-<br>lizer | 33" | Good    | Med. Lg.   |
|----------------|---|--------|---------|--------|----------------------------------|-----|---------|------------|
| Buckwheat      | 4 | "      | "       | "      | "                                | 42" | "       | "          |
| German Millet  | 4 | "      | "       | "      | "                                | 66" | "       | "          |
| Minn. Sorghum  | 4 | "      | "       | "      | "                                | 42" | "       | "          |
| Proso          | 4 | "      | "       | "      | "                                | "   | Failure | None       |
| Greeley Kaffir | 4 | "      | "       | "      | "                                | 75" | Good    | Med.       |
| Sudan Grass    | 4 | "      | "       | "      | "                                | 24" | "       | In Blossom |
| Soy Beans      | 4 | "      | "       | "      | "                                | 18" | Fair    | "          |
| Cow Peas       | 4 | "      | "       | "      | "                                | 11" | Good    | None       |
| Rape           | 4 | "      | "       | "      | "                                | 20" | "       | Med.       |
| Flax           | 4 | "      | "       | "      | "                                | "   | Failure | None       |
| Winter Vetch   | 4 | "      | "       | "      | "                                | "   | "       | "          |

# Year—1937

|   | 70% | No | No |
|---|-----|----|----|
| " | 60% | "  | "  |
| " | 70% | "  | "  |
| " | 90% | "  | "  |
| " | 70% | "  | "  |
| " | "   | "  | "  |
| " | "   | "  | "  |
| " | 65% | "  | "  |

# Sassafras Loamy Sand

|   | 0 | 2 | 50  | 2   | 50 | Tuckahoe |
|---|---|---|-----|-----|----|----------|
| " | 2 | 4 | 100 | 0   | 0  | "        |
| " | 0 | 4 | 100 | 0   | 0  | "        |
| " | 1 | 3 | 75  | 1   | 25 | "        |
| " | 0 | 0 | 4   | 100 | "  | "        |
| " | 1 | 4 | 100 | 0   | 0  | "        |
| " | 0 | 1 | 25  | 3   | 75 | "        |
| " | 0 | 4 | 100 | 0   | 0  | "        |
| " | 0 | 4 | 100 | 0   | 0  | "        |
| " | 0 | 2 | 50  | 2   | 50 | "        |
| " | 0 | 0 | 4   | 100 | "  | "        |

| Plant                 | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged                        | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract     | Remarks |
|-----------------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|-------------------------------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|-----------|---------|
| Observation Number XI |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                               |           |                   |                          |                         |         |                           |         |           |         |
|                       |                                 |                 |                  |                 |                                  |                   |                      |                 |                   | Year—1937                     |           |                   |                          |                         |         |                           |         |           |         |
|                       |                                 |                 |                  |                 |                                  |                   |                      |                 |                   | Sassafras Gravelly Sandy Loam |           |                   |                          |                         |         |                           |         |           |         |
| Buckwheat             | 13                              | May 25          | Oct. 20          | Mix. 1          | 1000 Lime<br>250 Ferti-<br>lizer | 27"               | Good                 | Med.            | 100%              | Partly                        | Partly    | Norm.             | 0                        | 13                      | 100     | 0                         | 0       | Glassboro |         |
| German Millet         | 13                              | "               | "                | "               | "                                | 40"               | "                    | "               | 100%              | "                             | "         | "                 | 5                        | 13                      | 100     | 0                         | 0       | "         |         |
| Minn. Sorghum         | 13                              | "               | "                | "               | "                                | 48"               | Fair                 | Sm. Med.        | 85%               | "                             | No        | "                 | 0                        | 12                      | 92      | 1                         | 8       | "         |         |
| Proso                 | 13                              | "               | "                | "               | "                                | 48"               | Failure              | None            | "                 | "                             | "         | "                 | 0                        | 0                       | 0       | 13                        | 100     | "         |         |
| Greeley Kaffir        | 13                              | "               | "                | "               | "                                | 48"               | Good                 | Med.            | 90%               | "                             | "         | "                 | 4                        | 13                      | 100     | 0                         | 0       | "         |         |
| Sudan Grass           | 13                              | "               | "                | "               | "                                | 40"               | Fair                 | "               | 100%              | "                             | Partly    | "                 | 0                        | 11                      | 84      | 2                         | 16      | "         |         |
| Soy Beans             | 13                              | "               | "                | "               | "                                | 18"               | "                    | "               | 100%              | No                            | No        | "                 | 0                        | 10                      | 76      | 3                         | 24      | "         |         |
| Cow Peas              | 13                              | "               | "                | "               | "                                | 18"               | Good                 | "               | 100%              | Partly                        | "         | "                 | 0                        | 13                      | 100     | 0                         | 0       | "         |         |
| Rape                  | 13                              | "               | "                | "               | "                                | 10"               | Fair                 | None            | "                 | No                            | "         | "                 | 0                        | 13                      | 100     | 0                         | 0       | "         |         |
| Flax                  | 13                              | "               | "                | "               | "                                | 18"               | "                    | Med.            | 75%               | Partly                        | "         | "                 | 0                        | 9                       | 69      | 4                         | 31      | "         |         |
| Winter Vetch          | 13                              | "               | "                | "               | "                                | 22"               | "                    | None            | "                 | No                            | "         | "                 | 0                        | 7                       | 54      | 6                         | 46      | "         |         |

## Observation Number XII

Year—1937

Sassafras Gravelly Loam

|                |   |        |         |        |                                  |     |      |          |      |        |        |       |   |   |     |   |    |           |  |
|----------------|---|--------|---------|--------|----------------------------------|-----|------|----------|------|--------|--------|-------|---|---|-----|---|----|-----------|--|
| Buckwheat      | 3 | May 25 | Oct. 22 | Mix. 1 | 1000 Lime<br>250 Ferti-<br>lizer | 28" | Good | Med.     | 100% | Partly | Partly | Norm. | 0 | 3 | 100 | 0 | 0  | Glassboro |  |
| German Millet  | 3 | "      | "       | "      | "                                | 36" | "    | "        | 100% | "      | "      | "     | 1 | 3 | 100 | 0 | 0  | "         |  |
| Minn. Sorghum  | 3 | "      | "       | "      | "                                | 40" | Fair | Med. Sm. | 100% | "      | "      | "     | 1 | 3 | 100 | 0 | 0  | "         |  |
| Proso          | 3 | "      | "       | "      | "                                | 36" | Good | Med.     | 100% | Yes    | "      | "     | 0 | 1 | 33  | 2 | 67 | "         |  |
| Greeley Kaffir | 3 | "      | "       | "      | "                                | 38" | "    | "        | 100% | Partly | No     | "     | 0 | 3 | 100 | 0 | 0  | "         |  |
| Sudan Grass    | 3 | "      | "       | "      | "                                | 42" | Fair | Sm.      | 100% | Yes    | "      | "     | 0 | 2 | 67  | 1 | 33 | "         |  |
| Soy Beans      | 3 | "      | "       | "      | "                                | 24" | "    | Lg.      | 100% | No     | "      | "     | 0 | 2 | 67  | 1 | 33 | "         |  |
| Cow Peas       | 3 | "      | "       | "      | "                                | 24" | "    | Med.     | 100% | Partly | "      | "     | 0 | 2 | 67  | 1 | 33 | "         |  |
| Rape           | 3 | "      | "       | "      | "                                | 9"  | "    | None     | "    | No     | "      | "     | 0 | 2 | 67  | 1 | 33 | "         |  |
| Flax           | 3 | "      | "       | "      | "                                | 15" | "    | Med. Sm. | 85%  | Partly | "      | "     | 0 | 2 | 67  | 1 | 33 | "         |  |
| Winter Vetch   | 3 | "      | "       | "      | "                                | 21" | Good | None     | "    | No     | "      | "     | 0 | 2 | 67  | 1 | 33 | "         |  |

## Observation Number XIII

Year—1939

Sassafras Gravelly Sandy Loam

|                |   |        |         |        |                     |     |      |          |     |          |          |     |   |   |     |   |   |            |  |
|----------------|---|--------|---------|--------|---------------------|-----|------|----------|-----|----------|----------|-----|---|---|-----|---|---|------------|--|
| Buckwheat      | 3 | May 11 | Sept. 9 | Mix. 1 | 300 Ferti-<br>lizer | 22" | Good | Med.     | 98% | Partly   | Partly   | Dry | 2 | 3 | 100 | 0 | 0 | Haleyville |  |
| German Millet  | 3 | "      | "       | "      | "                   | 24" | "    | "        | 95% | Slightly | Slightly | "   | 1 | 3 | 100 | 0 | 0 | "          |  |
| Minn. Sorghum  | 3 | "      | "       | "      | "                   | 36" | Fair | Sm.      | 90% | "        | No       | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Greeley Kaffir | 3 | "      | "       | "      | "                   | 32" | "    | "        | 90% | No       | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Sudan Grass    | 3 | "      | "       | "      | "                   | 40" | "    | Med. Sm. | 85% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Soy Beans      | 3 | "      | "       | "      | "                   | 17" | Good | Med.     | 85% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Cow Peas       | 3 | "      | "       | "      | "                   | 16" | "    | "        | 90% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Rape           | 3 | "      | "       | "      | "                   | 12" | Fair | "        | "   | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Flax           | 3 | "      | "       | "      | "                   | 15" | Good | "        | "   | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Winter Vetch   | 3 | "      | "       | "      | "                   | 12" | Fair | "        | "   | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |  |

|                |   |     |    |       |    | 1500 Lime<br>300 Ferti-<br>lizer |     |           |
|----------------|---|-----|----|-------|----|----------------------------------|-----|-----------|
| Buckwheat      | 3 | May | 13 | Sept. | 10 | Mix. 1                           | 22" | Good Med. |
| German Millet  | 3 | "   | "  | "     | "  | "                                | 27" | "         |
| Minn. Sorghum  | 3 | "   | "  | "     | "  | "                                | 36" | Fair Sm.  |
| Greeley Kaffir | 3 | "   | "  | "     | "  | "                                | 34" | "         |
| Sudan Grass    | 3 | "   | "  | "     | "  | "                                | 38" | "         |
| Soy Beans      | 3 | "   | "  | "     | "  | "                                | 14" | Good Med. |
| Cow Peas       | 3 | "   | "  | "     | "  | "                                | 14" | "         |
| Rape           | 3 | "   | "  | "     | "  | "                                | 11" | Fair      |
| Flax           | 3 | "   | "  | "     | "  | "                                | 14" | Good "    |
| Winter Vetch   | 3 | "   | "  | "     | "  | "                                | 12" | Fair      |

|                |   |        |         |        |   | 300 Ferti- |     |           |
|----------------|---|--------|---------|--------|---|------------|-----|-----------|
| Buckwheat      | 3 | May 17 | Sept. 7 | Mix. 1 |   | lizer      | 22" | Good Med. |
| German Millet  | 3 | "      | "       | "      | " | "          | 27" | "         |
| Minn. Sorghum  | 3 | "      | "       | "      | " | "          | 42" | Fair Sm.  |
| Greeley Kaffir | 3 | "      | "       | "      | " | "          | 34" | "         |
| Sudan Grass    | 3 | "      | "       | "      | " | "          | 47" | Good Med. |
| Soy Beans      | 3 | "      | "       | "      | " | "          | 17" | "         |
| Cow Peas       | 3 | "      | "       | "      | " | "          | 16" | "         |
| Rape           | 3 | "      | "       | "      | " | "          | 12" | "         |
| Flax           | 3 | "      | "       | "      | " | "          | 15" | "         |
| Winter Vetch   | 3 | "      | "       | "      | " | "          | 12" | Fair      |

|                | 1 | May 12 | Sept. 15 | Mix. 1 | 300 Ferti-<br>lizer | Failure |      |
|----------------|---|--------|----------|--------|---------------------|---------|------|
| Buckwheat      | 1 | "      | "        | "      | 35"                 | Good    | Med. |
| German Millet  | 1 | "      | "        | "      | 48"                 | Fair    | "    |
| Minn. Sorghum  | 1 | "      | "        | "      | 40"                 | Fair    | "    |
| Greeley Kaffir | 1 | "      | "        | "      | 55"                 | Good    | Lg.  |
| Sudan Grass    | 1 | "      | "        | "      | 16"                 | Fair    | Sm.  |
| Soy Beans      | 1 | "      | "        | "      | 12"                 | Good    |      |
| Cow Peas       | 1 | "      | "        | "      | 10"                 | Fair    |      |
| Rape           | 1 | "      | "        | "      | 18"                 | Fair    | Med. |
| Flax           | 1 | "      | "        | "      | 15"                 | Fair    |      |
| Winter Vetch   | 1 | "      | "        | "      |                     |         |      |

|                |   |        |         |        | 1500 Lime<br>300 Ferti-<br>lizer |     |      |      |
|----------------|---|--------|---------|--------|----------------------------------|-----|------|------|
| Buckwheat      | 4 | May 15 | Sept. 8 | Mix. 1 |                                  | 24" | Good | Med. |
| German Millet  | 4 | "      | "       | "      | "                                | 27" | "    | "    |
| Minn. Sorghum  | 4 | "      | "       | "      | "                                | 39" | Fair | "    |
| Greeley Kaffir | 4 | "      | "       | "      | "                                | 30" | "    | "    |
| Sudan Grass    | 4 | "      | "       | "      | "                                | 45" | Good | "    |
| Soy Beans      | 4 | "      | "       | "      | "                                | 15" | Fair | "    |
| Cow Peas       | 4 | "      | "       | "      | "                                | 14" | Good | "    |
| Rape           | 4 | "      | "       | "      | "                                | 13" | "    | "    |
| Flax           | 4 | "      | "       | "      | "                                | 13" | "    | "    |
| Winter Vetch   | 4 | "      | "       | "      | "                                | 13" | Fair | "    |

|     |          |          |     |   |   |     |   |   |            |
|-----|----------|----------|-----|---|---|-----|---|---|------------|
| 97% | Partly   | Partly   | Dry | 1 | 3 | 100 | 0 | 0 | Haleyville |
| 95% | Slightly | Slightly | "   | 2 | 3 | 100 | 0 | 0 |            |
| 90% | No       | No       | "   | 0 | 3 | 100 | 0 | 0 | "          |
| 90% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |
| 90% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |
| 90% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |
| 90% | "        | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |
| 95% | Slightly | "        | "   | 0 | 3 | 100 | 0 | 0 | "          |
|     | No       |          | "   | 0 | 3 | 100 | 0 | 0 | "          |

| Partly |          | Slightly |          | Dry |     | 2 |   | 3 |     | 100 |   | 0 |   | 0 |   | Haleyville |            |
|--------|----------|----------|----------|-----|-----|---|---|---|-----|-----|---|---|---|---|---|------------|------------|
| 100%   | Partly   |          | Partly   |     | Dry |   | 2 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | Haleyville |
| 90%    | Slightly |          | Slightly |     | "   |   | 1 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
| 90%    | "        |          | No       |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
| 90%    | No       |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
| 85%    | "        |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
| 80%    | "        |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
| 90%    | "        |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
|        | "        |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
| 90%    | Slightly |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |
|        | No       |          | "        |     | "   |   | 0 | 3 | 100 |     | 0 |   | 0 |   | 0 |            | "          |

| Year 1933 |    | Substrata: Reddy Sand |     |   |     |     |          |
|-----------|----|-----------------------|-----|---|-----|-----|----------|
|           | No | No                    | Dry | 0 | 0   | 100 | Tuckahoe |
| 90%       | No | No                    | 0   | 0 | 1   | 100 | 0        |
| 90%       | "  | "                     | 0   | 1 | 100 | 0   | 0        |
| 95%       | "  | "                     | 0   | 1 | 100 | 0   | 0        |
| 90%       | "  | "                     | 0   | 1 | 100 | 0   | 0        |
| 95%       | "  | "                     | 0   | 1 | 100 | 0   | 0        |
| 100%      | "  | "                     | 0   | 1 | 100 | 0   | 0        |
|           | "  | "                     | 1   | 1 | 100 | 0   | 0        |
| 70%       | "  | "                     | 0   | 1 | 100 | 0   | 0        |
|           | "  | "                     | 0   | 1 | 100 | 0   | 0        |

|     |          |        |     |   |   |     |   |   |            |
|-----|----------|--------|-----|---|---|-----|---|---|------------|
| 95% | Partly   | Partly | Dry | 3 | 4 | 100 | 0 | 0 | Haleyville |
| 90% | No       | No     | "   | 1 | 4 | 100 | 0 | 0 | "          |
| 90% | "        | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
| 85% | "        | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
| 85% | Slightly | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
| 85% | No       | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
| 85% | "        | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
| 85% | "        | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
| 90% | Slightly | "      | "   | 0 | 4 | 100 | 0 | 0 | "          |
|     | No       |        | "   | 0 | 4 | 100 | 0 | 0 | "          |



## Observation Number XVIII

| Plant          | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract    | Remarks |
|----------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|--------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|----------|---------|
|                |                                 |                 |                  |                 | 1000 Lime<br>300 Ferti-<br>lizer |                   |                      |                 |                   |        |           |                   |                          |                         |         |                           |         |          |         |
| Buckwheat      | 4                               | May 12          | Sept. 16         | Mix. 1          |                                  | 20"               | Good                 | Lg.             | 100%              | No     | Slightly  | Dry               | 1                        | 4                       | 100     | 0                         | 0       | Tuckahoe |         |
| German Millet  | 4                               | "               | "                | "               |                                  | 26"               | "                    |                 | 98%               | "      | No        | "                 | 1                        | 4                       | 100     | 0                         | 0       | "        |         |
| Minn. Sorghum  | 4                               | "               | "                | "               |                                  | 49"               | "                    | Med.            | 93%               | "      | "         | "                 | 2                        | 4                       | 100     | 0                         | 0       | "        |         |
| Greeley Kaffir | 4                               | "               | "                | "               |                                  | 42"               | "                    | "               | 95%               | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |
| Sudan Grass    | 4                               | "               | "                | "               |                                  | 54"               | "                    | "               | 93%               | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |
| Soy Beans      | 4                               | "               | "                | "               |                                  | 16"               | "                    | Lg.             | 95%               | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |
| Cow Peas       | 4                               | "               | "                | "               |                                  | 13"               | Fair                 | Sm.             | 98%               | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |
| Rape           | 4                               | "               | "                | "               |                                  | 12"               | Good                 | "               | "                 | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |
| Flax           | 4                               | "               | "                | "               |                                  | 18"               | "                    | "               | 95%               | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |
| Winter Vetch   | 4                               | "               | "                | "               |                                  | 18"               | "                    | Lg.             | "                 | "      | "         | "                 | 0                        | 4                       | 100     | 0                         | 0       | "        |         |

Year—1939

Sassafras Sand

## Observation Number XIX

| Plant          | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract         | Remarks |
|----------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|--------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|---------------|---------|
|                |                                 |                 |                  |                 | 1500 Lime<br>300 Ferti-<br>lizer |                   |                      |                 |                   |        |           |                   |                          |                         |         |                           |         |               |         |
| Buckwheat      | 1                               | May 22          | Sept. 15         | Mix. 1          |                                  | 18"               | Fair                 | Sm.             | 100%              | Partly | Partly    | Dry               | 0                        | 1                       | 100     | 0                         | 0       | Manahawkin    |         |
| German Millet  | 1                               | "               | "                | "               |                                  | 24"               | Good                 | Sm.             | 90%               | No     | No        | "                 | 1                        | 1                       | 100     | 0                         | 0       | "             |         |
| Minn. Sorghum  | 1                               | "               | "                | "               |                                  | 48"               | Fair                 | "               | 85%               | "      | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "             |         |
| Greeley Kaffir | 1                               | "               | "                | "               |                                  | "                 | Failure              | "               | "                 | "      | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "             |         |
| Sudan Grass    | 1                               | "               | "                | "               |                                  | 48"               | Fair                 | "               | 85%               | "      | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "             |         |
| Soy Beans      | 1                               | "               | "                | "               |                                  | 14"               | "                    | "               | 75%               | "      | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "             |         |
| Cow Peas       | 1                               | "               | "                | "               |                                  | "                 | Failure              | "               | "                 | "      | "         | "                 | 0                        | 0                       | 1       | 100                       | "       | Eaten by deer |         |
| Rape           | 1                               | "               | "                | "               |                                  | "                 | "                    | "               | "                 | "      | "         | "                 | 0                        | 0                       | 1       | 100                       | "       | "             |         |
| Flax           | 1                               | "               | "                | "               |                                  | 12"               | Fair                 | "               | 95%               | "      | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "             |         |
| Winter Vetch   | 1                               | "               | "                | "               |                                  | 12"               | "                    | "               | "                 | "      | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "             |         |

Year—1939

Sassafras Sandy Loam

## Observation Number XX

| Plant          | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged   | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract      | Remarks |
|----------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|----------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|------------|---------|
|                |                                 |                 |                  |                 | 1500 Lime<br>300 Ferti-<br>lizer |                   |                      |                 |                   |          |           |                   |                          |                         |         |                           |         |            |         |
| Buckwheat      | 3                               | May 16          | Sept. 8          | Mix. 1          |                                  | 21"               | Fair                 | Sm.             | 100%              | Partly   | Partly    | Dry               | 0                        | 3                       | 100     | 0                         | 0       | Manahawkin |         |
| German Millet  | 3                               | "               | "                | "               |                                  | 30"               | Good                 | Med.            | 95%               | Slightly | Slightly  | "                 | 3                        | 3                       | 100     | 0                         | 0       | "          |         |
| Minn. Sorghum  | 3                               | "               | "                | "               |                                  | 45"               | Fair                 | Sm.             | 90%               | No       | No        | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Greeley Kaffir | 3                               | "               | "                | "               |                                  | 44"               | "                    | "               | 90%               | "        | "         | "                 | 0                        | 2                       | 67      | 1                         | 33      | "          |         |
| Sudan Grass    | 3                               | "               | "                | "               |                                  | 50"               | "                    | "               | 90%               | "        | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Soy Beans      | 3                               | "               | "                | "               |                                  | 18"               | "                    | Med.            | 85%               | "        | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Cow Peas       | 3                               | "               | "                | "               |                                  | 15"               | "                    | "               | 85%               | "        | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Rape           | 3                               | "               | "                | "               |                                  | 9"                | "                    | "               | "                 | "        | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Flax           | 3                               | "               | "                | "               |                                  | 15"               | Good                 | "               | 100%              | "        | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Winter Vetch   | 3                               | "               | "                | "               |                                  | 16"               | "                    | "               | "                 | "        | "         | "                 | 0                        | 1                       | 33      | 2                         | 67      | "          |         |

Year—1939

Sassafras Loamy Sand

[illegible]

| 150 Ferti-     |   |        |         |        |       |     |      |          |      |        |        |     |   |   |     |   |   |               |
|----------------|---|--------|---------|--------|-------|-----|------|----------|------|--------|--------|-----|---|---|-----|---|---|---------------|
|                | 1 | May 23 | Sept. 7 | Mix. 1 | lizer |     |      |          |      |        |        |     |   |   |     |   |   |               |
| Buckwheat      | 1 |        |         |        |       | 38" | Fair | Sm.      | 100% | Partly | Partly | Dry | 0 | 1 | 100 | 0 | 0 | Manahawkin    |
| German Millet  | 1 |        |         |        |       | 48" | Good | Med.     | 85%  | No     | No     | "   | 1 | 1 | 100 | 0 | 0 |               |
| Minn. Sorghum  | 1 |        |         |        |       | 60" | Fair | Sm.      | 85%  | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |
| Greeley Kaffir | 1 |        |         |        |       | 60" | "    | Smut Sm. | 80%  | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |
| Sudan Grass    | 1 |        |         |        |       | 72" | "    | Sm.      | 100% | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |
| Soy Beans      | 1 |        |         |        |       |     |      |          |      |        |        |     | 0 | 0 |     |   |   | Eaten by deer |
| Cow Peas       | 1 |        |         |        |       | 36" | "    | Med.     | 80%  | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |
| Rape           | 1 |        |         |        |       | 18" | Good | "        | "    | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |
| Flax           | 1 |        |         |        |       | 24" | Fair | Sm.      | 100% | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |
| Winter Vetch   | 1 |        |         |        |       | 14" | Good | "        | "    | "      | "      | "   | 0 | 1 | 100 | 0 | 0 | "             |

During the seasons of 1936, 1937, and 1939, a total of 22 observational areas in the Coastal Plain Region contained 90 food patches. A total of seven soil types was represented.

1936—Five observational areas contained a total of 23 food patches, the seed beds of which had been treated with lime and fertilizer. Three soil types common to southern New Jersey were present.

The growing season was normal and production was good, with the soils loamy in texture making the better growth. The planting interval was from May 7 to May 20.

1937—Seven observational areas contained a total of 43 food patches. Forty-one patches received a treatment of lime and fertilizer with two patches receiving only fertilizer. Six soil types common to the coastal plain region were represented.

The precipitation varied from below normal to normal, depending upon location. Production in all instances was good with growth more profuse on the loamy soils. The planting interval was from May 25 to June 3.

1939—Eleven observational areas contained a total of 24 food patches. Twenty patches received applications of lime and fertilizer and 4 patches received only a treatment of fertilizer. Four soil types were present. The growing season was generally dry and resulting food production was good.

In that portion of the Coastal Plain Region wherein the counties of Salem, Cumberland, Cape May, Atlantic, Gloucester, and Camden are located, it is recommended that the number one food patch mixture be planted during the interval of May 5 to June 1. In the northern portion of the area, comprising Burlington, Ocean, Monmouth, and southern Mercer, it is recommended that planting take place during the interval of May 15 to June 10.

Soil treatment is necessary and should consist of lime and fertilizer. Food can be produced, however, if fertilizer is the only treatment available. It is recommended that plantings be made on sandy loams, loamy sands, or gravelly loams, rather than on those soils classified as sands.

#### FOOD PATCH MIXTURE NO. 2

|                     |         |
|---------------------|---------|
| Buckwheat .....     | 15 lbs. |
| German Millet ..... | 15 "    |
| Sudan Grass .....   | 15 "    |
| Soy Beans .....     | 25 "    |
| Cow Peas .....      | 25 "    |
| Rape .....          | 5 "     |
| <hr/>               |         |
| 100 lbs.            |         |

The above mixture has performed well in the Coastal Plain Region in the few locations where it has been tried. Trials so far indicate that good results can be received from this mixture when it is planted as late as the first half of July in the southern part of the State. The rate of seeding is 25 pounds per acre. Soil improvement in the form of application of commercial fertilizer is necessary to adequate growth and the use of limestone further aids the mixture in producing a seed crop.

Often necessary duties make it impossible or undesirable for the farmer or sportsman to install food patches during early June. To those who find it necessary to make comparatively late plantings, we recommend the use of the above mixture.

# FOOD PATCH MIXTURE NUMBER II — CHART NUMBER I — COASTAL PLAIN REGION

KEY TO ABBREVIATIONS: Mix.—Mixture; Med.—Medium; Excel.—Excellent; Lg.—Large; Sm.—Small; Norm.—Normal; Gd.—Good

| Plant | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract | Remarks |
|-------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|--------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|-------|---------|
|-------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|--------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|-------|---------|

## Observation Number I

Year—1936

Sassafras Sand

|               |   |        |        |        |                                  |     |        |          |      |        |        |     |   |   |     |   |    |            |  |
|---------------|---|--------|--------|--------|----------------------------------|-----|--------|----------|------|--------|--------|-----|---|---|-----|---|----|------------|--|
| 45            |   |        |        |        | 2000 Lime<br>250 Ferti-<br>lizer |     |        |          |      |        |        |     |   |   |     |   |    |            |  |
| Buckwheat     | 3 | July 9 | Nov. 4 | Mix. 2 | "                                | 26" | Good   | Med.     | 100% | Partly | Partly | Wet | 0 | 3 | 100 | 0 | 0  | Haleyville |  |
| German Millet | 3 | "      | "      | "      | "                                | 20" | "      | Med. Sm. | 100% | "      | "      | "   | 0 | 3 | 100 | 0 | 0  | "          |  |
| Sudan Grass   | 3 | "      | "      | "      | "                                | 54" | Excel. | Lg.      | 100% | Yes    | No     | "   | 3 | 3 | 100 | 0 | 0  | "          |  |
| Soy Beans     | 3 | "      | "      | "      | "                                | 14" | Fair   | Med.     | 100% | Partly | "      | "   | 0 | 2 | 67  | 1 | 33 | "          |  |
| Cow Peas      | 3 | "      | "      | "      | "                                | 12" | "      | "        | 75%  | "      | "      | "   | 0 | 3 | 100 | 0 | 0  | "          |  |
| Rape          | 3 | "      | "      | "      | "                                | 9"  | "      | None     |      | No     | "      | "   | 0 | 3 | 100 | 0 | 0  | "          |  |

## Observation Number II

Year—1936

St. Johns Sand

|               |   |         |        |        |                                  |     |        |      |      |        |        |     |   |   |     |   |   |            |  |
|---------------|---|---------|--------|--------|----------------------------------|-----|--------|------|------|--------|--------|-----|---|---|-----|---|---|------------|--|
|               |   |         |        |        | 2000 Lime<br>250 Ferti-<br>lizer |     |        |      |      |        |        |     |   |   |     |   |   |            |  |
| Buckwheat     | 3 | July 10 | Nov. 6 | Mix. 2 | "                                | 27" | Good   | Med. | 100% | Partly | Partly | Wet | 0 | 3 | 100 | 0 | 0 | Haleyville |  |
| German Millet | 3 | "       | "      | "      | "                                | 30" | "      | "    | 100% | "      | "      | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Sudan Grass   | 3 | "       | "      | "      | "                                | 63" | Excel. | Lg.  | 100% | Yes    | No     | "   | 3 | 3 | 100 | 0 | 0 | "          |  |
| Soy Beans     | 3 | "       | "      | "      | "                                | 15" | Good   | Med. | 100% | Partly | "      | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Cow Peas      | 3 | "       | "      | "      | "                                | 19" | Fair   | "    | 75%  | Yes    | "      | "   | 0 | 3 | 100 | 0 | 0 | "          |  |
| Rape          | 3 | "       | "      | "      | "                                | 12" | Good   | None |      | No     | "      | "   | 0 | 3 | 100 | 0 | 0 | "          |  |

### FOOD PATCH MIXTURE NO. 3

|                           |         |
|---------------------------|---------|
| Buckwheat (tartary) ..... | 10 lbs. |
| German Millet .....       | 10 "    |
| Minnesota Sorghum .....   | 7 "     |
| Greeley Kaffir .....      | 7 "     |
| Sudan Grass .....         | 5 "     |
| Soy Beans (Ito San) ..... | 9 "     |
| Cow Peas (New Era) .....  | 11 "    |
| Rape .....                | 5 "     |
| Dwarf Milo .....          | 7 "     |
| Flax .....                | 10 "    |
| Winter Vetch .....        | 9 "     |
| Proso .....               | 10 "    |

100 lbs.

The above food patch mixture represents a variation of the Number One Mixture with the addition of Dwarf Milo. It was thought that the latter named plant with its short stout stem and the resulting ability to maintain an erect position throughout the winter would be a valuable addition to the food patch mixture.

Soil preparation and planting recommendations are identical with those listed for Food Patch Mixture Number One.

The following table indicates the results obtained from Food Patch Mixture Number Three when planted in various sections of the State.



# FOOD PATCH MIXTURE NUMBER III—CHART NUMBER 1—APPALACHIAN VALLEY REGION

KEY TO ABBREVIATIONS: Mix.—Mixture; Med.—Medium; Excel.—Excellent; Lg.—Large; Sm.—Small; Norm.—Normal; Gd.—Good

| Plant                | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged    | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent     | Unsuccessful<br>Plantings | Percent | Tract | Remarks |
|----------------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|-----------|-----------|-------------------|--------------------------|-------------------------|-------------|---------------------------|---------|-------|---------|
| Observation Number I |                                 |                 |                  |                 |                                  |                   |                      |                 |                   | Year—1938 |           |                   |                          |                         | Hoosic Loam |                           |         |       |         |
|                      |                                 |                 |                  |                 | 1500 Lime<br>200 Ferti-<br>lizer |                   |                      |                 |                   |           |           |                   |                          |                         |             |                           |         |       |         |
| Buckwheat            | 3                               | May 13          | Aug. 19          | Mix. 3          |                                  |                   | Failure              | None            |                   |           |           | Wet               |                          | 0                       | 0           | 3                         | 100     | Roy   |         |
| German Millet        | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Minn. Sorghum        | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Greeley Kaffir       | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Sudan Grass          | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Soy Beans            | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Cow Peas             | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Rape                 | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Dwarf Milo           | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Flax                 | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |
| Winter Vetch         | 3                               | "               | "                | "               | "                                | "                 | "                    | "               |                   |           |           | "                 |                          | 0                       | 0           | 3                         | 100     | "     |         |

|                       |   |        |         |        |                                  |     |         |            |      |           |        |     |   |   |             |   |     |          |  |
|-----------------------|---|--------|---------|--------|----------------------------------|-----|---------|------------|------|-----------|--------|-----|---|---|-------------|---|-----|----------|--|
| Observation Number II |   |        |         |        |                                  |     |         |            |      | Year—1938 |        |     |   |   | Hoosic Loam |   |     |          |  |
|                       |   |        |         |        | 1575 Lime<br>250 Ferti-<br>lizer |     |         |            |      |           |        |     |   |   |             |   |     |          |  |
| Buckwheat             | 3 | May 18 | Aug. 17 | Mix. 3 |                                  | 24" | Good    | Med.       | 100% | No        | Partly | Wet | 0 | 1 | 33          | 2 | 67  | Wallpack |  |
| German Millet         | 3 | "      | "       | "      | "                                | 40" | "       | "          | 25%  | "         | No     | "   | 3 | 3 | 100         | 0 | 0   | "        |  |
| Minn. Sorghum         | 3 | "      | "       | "      | "                                | 66" | "       | "          | 20%  | "         | "      | "   | 0 | 1 | 33          | 2 | 67  | "        |  |
| Greeley Kaffir        | 3 | "      | "       | "      | "                                | "   | Failure | None       |      |           | "      | "   |   | 0 | 0           | 3 | 100 | "        |  |
| Sudan Grass           | 3 | "      | "       | "      | "                                | 54" | Good    | Med.       | 25%  | "         | "      | "   | 0 | 1 | 33          | 2 | 67  | "        |  |
| Soy Beans             | 3 | "      | "       | "      | "                                | 12" | Fair    | In Blossom |      |           | "      | "   | 0 | 3 | 100         | 0 | 0   | "        |  |
| Cow Peas              | 3 | "      | "       | "      | "                                | 22" | Good    | "          |      |           | "      | "   | 0 | 3 | 100         | 0 | 0   | "        |  |
| Rape                  | 3 | "      | "       | "      | "                                | 12" | "       | None       |      |           | "      | "   | 0 | 3 | 100         | 0 | 0   | "        |  |
| Dwarf Milo            | 3 | "      | "       | "      | "                                | 24" | Fair    | Sm.        | 25%  | "         | "      | "   | 0 | 1 | 33          | 2 | 67  | "        |  |
| Flax                  | 3 | "      | "       | "      | "                                | 18" | Good    | Med.       | 50%  | "         | "      | "   | 0 | 3 | 100         | 0 | 0   | "        |  |
| Winter Vetch          | 3 | "      | "       | "      | "                                | 22" | "       | None       |      |           | "      | "   | 0 | 3 | 100         | 0 | 0   | "        |  |

|                        |   |        |         |        |                                  |   |         |      |  |           |  |     |  |   |                     |   |     |          |  |
|------------------------|---|--------|---------|--------|----------------------------------|---|---------|------|--|-----------|--|-----|--|---|---------------------|---|-----|----------|--|
| Observation Number III |   |        |         |        |                                  |   |         |      |  | Year—1938 |  |     |  |   | Wallpack Stony Loam |   |     |          |  |
|                        |   |        |         |        | 1520 Lime<br>250 Ferti-<br>lizer |   |         |      |  |           |  |     |  |   |                     |   |     |          |  |
| Buckwheat              | 1 | May 16 | Aug. 16 | Mix. 3 |                                  |   | Failure | None |  |           |  | Wet |  | 0 | 0                   | 1 | 100 | Wallpack |  |
| German Millet          | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Minn. Sorghum          | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Greeley Kaffir         | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Sudan Grass            | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Soy Beans              | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Cow Peas               | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Rape                   | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Dwarf Milo             | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Flax                   | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |
| Winter Vetch           | 1 | "      | "       | "      | "                                | " | "       | "    |  |           |  | "   |  | 0 | 0                   | 1 | 100 | "        |  |

| Plant                 | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered            | Growing<br>Season | No. Times<br>Predominant<br>Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract       | Remarks |
|-----------------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|--------|----------------------|-------------------|-----------------------------------------------------|---------|---------------------------|---------|-------------|---------|
| Observation Number IV |                                 |                 |                  |                 |                                  |                   |                      |                 | Year—1938         |        | Papakating Silt Loam |                   |                                                     |         |                           |         |             |         |
| Buckwheat             | 3                               | May 10          | Aug. 22          | Mix. 3          | 1500 Lime<br>200 Ferti-<br>lizer |                   | Failure              | None            |                   |        |                      | Wet               | 0                                                   | 0       | 3                         | 100     | Hainesville |         |
| German Millet         | 3                               | "               | "                | "               | "                                | 36"               | Good                 | Med.            | 50%               | No     | No                   | "                 | 3                                                   | 100     | 0                         | 0       | "           |         |
| Minn. Sorghum         | 3                               | "               | "                | "               | "                                |                   | Failure              | None            |                   |        |                      | "                 | 0                                                   | 0       | 3                         | 100     | "           |         |
| Greeley Kaffir        | 3                               | "               | "                | "               | "                                |                   | "                    | "               |                   |        |                      | "                 | 0                                                   | 0       | 3                         | 100     | "           |         |
| Sudan Grass           | 3                               | "               | "                | "               | "                                |                   | "                    | "               |                   |        |                      | "                 | 0                                                   | 0       | 3                         | 100     | "           |         |
| Soy Beans             | 3                               | "               | "                | "               | "                                | 18"               | Fair                 | In Blossom      |                   |        |                      | "                 | 0                                                   | 1       | 33                        | 2       | 67          | "       |
| Cow Peas              | 3                               | "               | "                | "               | "                                | 24"               | Good                 | "               |                   |        |                      | "                 | 0                                                   | 3       | 100                       | 0       | 0           | "       |
| Rape                  | 3                               | "               | "                | "               | "                                | 9"                | Fair                 | None            |                   |        |                      | "                 | 0                                                   | 1       | 33                        | 2       | 67          | "       |
| Dwarf Milo            | 3                               | "               | "                | "               | "                                |                   | Failure              | "               |                   |        |                      | "                 | 0                                                   | 0       | 3                         | 100     | "           |         |
| Flax                  | 3                               | "               | "                | "               | "                                |                   | "                    | "               |                   |        |                      | "                 | 0                                                   | 0       | 3                         | 100     | "           |         |
| Winter Vetch          | 3                               | "               | "                | "               | "                                | 26"               | Good                 | "               |                   |        |                      | "                 | 0                                                   | 3       | 100                       | 0       | 0           | "       |

|                      |   |        |         |        |                                  |     |         |            |           |    |                      |     |   |   |     |     |          |   |
|----------------------|---|--------|---------|--------|----------------------------------|-----|---------|------------|-----------|----|----------------------|-----|---|---|-----|-----|----------|---|
| Observation Number V |   |        |         |        |                                  |     |         |            | Year—1938 |    | Hoosic Gravelly Loam |     |   |   |     |     |          |   |
| Buckwheat            | 1 | May 16 | Aug. 17 | Mix. 3 | 1500 Lime<br>240 Ferti-<br>lizer |     | Failure | None       |           |    |                      | Wet | 0 | 0 | 1   | 100 | Wallpack |   |
| German Millet        | 1 | "      | "       | "      | "                                | 45" | Good    | Med.       | 50%       | No | No                   | "   | 1 | 1 | 100 | 0   | 0        | " |
| Minn. Sorghum        | 1 | "      | "       | "      | "                                |     | Failure | None       |           |    |                      | "   | 0 | 0 | 1   | 100 | "        |   |
| Greeley Kaffir       | 1 | "      | "       | "      | "                                |     | "       | "          |           |    |                      | "   | 0 | 0 | 1   | 100 | "        |   |
| Sudan Grass          | 1 | "      | "       | "      | "                                |     | "       | "          |           |    |                      | "   | 0 | 0 | 1   | 100 | "        |   |
| Soy Beans            | 1 | "      | "       | "      | "                                | 12" | Fair    | In Blossom |           |    |                      | "   | 0 | 0 | 1   | 100 | "        |   |
| Cow Peas             | 1 | "      | "       | "      | "                                |     | Failure | None       |           |    |                      | "   | 0 | 1 | 100 | 0   | 0        | " |
| Rape                 | 1 | "      | "       | "      | "                                | 9"  | Fair    | "          |           |    |                      | "   | 0 | 0 | 1   | 100 | "        |   |
| Dwarf Milo           | 1 | "      | "       | "      | "                                |     | Failure | "          |           |    |                      | "   | 0 | 1 | 100 | 0   | 0        | " |
| Flax                 | 1 | "      | "       | "      | "                                | 24" | Good    | "          | 50%       | "  | "                    | "   | 0 | 0 | 1   | 100 | "        |   |
| Winter Vetch         | 1 | "      | "       | "      | "                                | 36" | "       | None       |           |    |                      | "   | 0 | 1 | 100 | 0   | 0        | " |

|                       |   |        |         |        |                                  |  |         |      |           |  |                      |     |   |   |   |     |     |  |
|-----------------------|---|--------|---------|--------|----------------------------------|--|---------|------|-----------|--|----------------------|-----|---|---|---|-----|-----|--|
| Observation Number VI |   |        |         |        |                                  |  |         |      | Year—1938 |  | Hoosic Gravelly Loam |     |   |   |   |     |     |  |
| Buckwheat             | 1 | May 13 | Aug. 18 | Mix. 3 | 1500 Lime<br>200 Ferti-<br>lizer |  | Failure | None |           |  |                      | Wet | 0 | 0 | 1 | 100 | Roy |  |
| German Millet         | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Minn. Sorghum         | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Greeley Kaffir        | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Sudan Grass           | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Soy Beans             | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Cow Peas              | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Rape                  | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Dwarf Milo            | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Flax                  | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |
| Winter Vetch          | 1 | "      | "       | "      | "                                |  | "       | "    |           |  |                      | "   | 0 | 0 | 1 | 100 | "   |  |

# Observation Number VII

|                |   |        |         | 1500 Lime  |     |      |            | Year—1938 |        |        | Wallpack Shale Loam |         |      |
|----------------|---|--------|---------|------------|-----|------|------------|-----------|--------|--------|---------------------|---------|------|
|                |   |        |         | 280 Ferti- | 24" | Good | Med.       | 75%       | Partly | Partly | Wet                 | 0 2 67  | 1 33 |
| Buckwheat      |   |        |         | lizer      | 36" | "    | "          | 50%       | No     | No     | "                   | 1 3 100 | 0 0  |
| German Millet  | 3 | May 17 | Aug. 16 | Mix. 3     | 52" | "    | "          | 30%       | "      | "      | "                   | 0 2 67  | 1 33 |
| Minn. Sorghum  | 3 | "      | "       | "          | 60" | "    | Sm.        | 10%       | "      | "      | "                   | 0 2 67  | 1 33 |
| Greeley Kaffir | 3 | "      | "       | "          | 60" | "    | Med.       | 25%       | "      | "      | "                   | 0 2 67  | 1 33 |
| Sudan Grass    | 3 | "      | "       | "          | 18" | "    | In Blossom | "         | "      | "      | "                   | 0 3 100 | 0 0  |
| Soy Beans      | 3 | "      | "       | "          | 21" | "    | "          | "         | "      | "      | "                   | 0 3 100 | 0 0  |
| Cow Peas       | 3 | "      | "       | "          | 16" | "    | None       | "         | "      | "      | "                   | 1 3 100 | 0 0  |
| Rape           | 3 | "      | "       | "          | 27" | Fair | Sm.        | 10%       | "      | "      | "                   | 0 3 100 | 0 0  |
| Dwarf Milo     | 3 | "      | "       | "          | 18" | Good | Med.       | 70%       | "      | "      | "                   | 0 3 100 | 0 0  |
| Flax           | 3 | "      | "       | "          | 24" | "    | None       | "         | "      | "      | "                   | 0 3 100 | 0 0  |
| Winter Vetch   | 3 | "      | "       | "          | "   | "    | "          | "         | "      | "      | "                   | 0 3 100 | 0 0  |

## CHART NUMBER II — PIEDMONT PLAIN REGION

|                |    |        |         | 250 Ferti- |     |         |          | Year—1938 |    |    | Hagerstown Silt Loam |              |         |
|----------------|----|--------|---------|------------|-----|---------|----------|-----------|----|----|----------------------|--------------|---------|
|                |    |        |         | lizer      | 34" | Good    | Med.     | 99%       | No | No | Wet                  | 0 10 55 8 45 | Clinton |
| Buckwheat      | 18 | May 17 | Aug. 16 | Mix. 3     | 45" | "       | Med. Lg. | 96%       | "  | "  | "                    | 1 18 100 0 0 | "       |
| German Millet  | 18 | "      | "       | "          | 86" | "       | "        | 92%       | "  | "  | "                    | 3 18 100 0 0 | "       |
| Minn. Sorghum  | 18 | "      | "       | "          | 58" | "       | "        | 95%       | "  | "  | "                    | 0 6 33 12 67 | "       |
| Golden Millet  | 18 | "      | "       | "          | 66" | "       | "        | 93%       | "  | "  | "                    | 0 16 89 2 11 | "       |
| Greeley Kaffir | 18 | "      | "       | "          | 71" | "       | "        | 93%       | "  | "  | "                    | 0 18 100 0 0 | "       |
| Sudan Grass    | 18 | "      | "       | "          | 29" | Poor    | Sm.      | 88%       | "  | "  | "                    | 0 7 39 11 61 | "       |
| Soy Beans      | 18 | "      | "       | "          | 38" | Fair    | "        | 89%       | "  | "  | "                    | 0 16 89 2 11 | "       |
| Cow Peas       | 18 | "      | "       | "          | 21" | "       | None     | "         | "  | "  | "                    | 0 5 28 13 72 | "       |
| Rape           | 18 | "      | "       | "          | 40" | Good    | Med. Lg. | 91%       | "  | "  | "                    | 0 14 78 4 22 | "       |
| Dwarf Milo     | 18 | "      | "       | "          | 24" | Fair    | "        | 96%       | "  | "  | "                    | 0 6 33 12 67 | "       |
| Flax           | 18 | "      | "       | "          | 20" | Failure | None     | "         | "  | "  | "                    | 0 3 17 15 83 | "       |
| Winter Vetch   | 18 | "      | "       | "          | "   | "       | "        | "         | "  | "  | "                    | "            | "       |

# Observation Number IX

|                |   |         |         |        |     |         |      | Year—1938 |    |    | Hagerstown Silt Loam |             |         |
|----------------|---|---------|---------|--------|-----|---------|------|-----------|----|----|----------------------|-------------|---------|
|                |   |         |         | None   | 32" | Fair    | Med. | 95%       | No | No | Wet                  | 0 5 100 0 0 | Clinton |
| Buckwheat      | 5 | June 23 | Sept. 6 | Mix. 3 | 40" | "       | "    | 82%       | "  | "  | "                    | 0 5 100 0 0 | "       |
| German Millet  | 5 | "       | "       | "      | 60" | Good    | "    | 79%       | "  | "  | "                    | 1 5 100 0 0 | "       |
| Minn. Sorghum  | 5 | "       | "       | "      | 50" | "       | "    | 80%       | "  | "  | "                    | 0 1 20 4 80 | "       |
| Golden Millet  | 5 | "       | "       | "      | 40" | Fair    | "    | 80%       | "  | "  | "                    | 0 4 80 1 20 | "       |
| Greeley Kaffir | 5 | "       | "       | "      | 62" | Good    | "    | 82%       | "  | "  | "                    | 0 5 100 0 0 | "       |
| Sudan Grass    | 5 | "       | "       | "      | 24" | Failure | Sm.  | 80%       | "  | "  | "                    | 0 1 20 4 80 | "       |
| Soy Beans      | 5 | "       | "       | "      | 40" | Fair    | "    | 80%       | "  | "  | "                    | 0 5 100 0 0 | "       |
| Cow Peas       | 5 | "       | "       | "      | "   | Failure | None | "         | "  | "  | "                    | 0 0 0 5 100 | "       |
| Rape           | 5 | "       | "       | "      | 35" | Good    | Med. | 80%       | "  | "  | "                    | 0 2 40 3 60 | "       |
| Dwarf Milo     | 5 | "       | "       | "      | 16" | Poor    | Sm.  | 80%       | "  | "  | "                    | 0 1 20 4 80 | "       |
| Flax           | 5 | "       | "       | "      | "   | Failure | None | "         | "  | "  | "                    | 0 0 0 5 100 | "       |
| Winter Vetch   | 5 | "       | "       | "      | "   | "       | "    | "         | "  | "  | "                    | "           | "       |

## CHART NUMBER III — COASTAL PLAIN REGION

|                |   |        |         | 2000 Lime  |     |      |            | Year—1938 |    |        | Sassafras Gravelly Sandy Loam |             |           |
|----------------|---|--------|---------|------------|-----|------|------------|-----------|----|--------|-------------------------------|-------------|-----------|
|                |   |        |         | 250 Ferti- | 36" | Good | Med.       | 95%       | No | Partly | Wet                           | 0 7 100 0 0 | Glassboro |
| Buckwheat      |   |        |         | lizer      | 48" | "    | "          | 80%       | "  | No     | "                             | 7 7 100 0 0 | "         |
| German Millet  | 7 | May 15 | Aug. 31 | Mix. 3     | 72" | Fair | "          | 75%       | "  | "      | "                             | 0 2 28 5 72 | "         |
| Minn. Sorghum  | 7 | "      | "       | "          | 72" | Good | "          | 75%       | "  | "      | "                             | 0 6 86 1 14 | "         |
| Greeley Kaffir | 7 | "      | "       | "          | 66" | "    | "          | 85%       | "  | "      | "                             | 0 7 100 0 0 | "         |
| Sudan Grass    | 7 | "      | "       | "          | 36" | "    | "          | 70%       | "  | "      | "                             | 0 7 100 0 0 | "         |
| Soy Beans      | 7 | "      | "       | "          | 30" | "    | In Blossom | "         | "  | "      | "                             | 0 7 100 0 0 | "         |
| Cow Peas       | 7 | "      | "       | "          | 12" | "    | None       | "         | "  | "      | "                             | 0 7 100 0 0 | "         |
| Rape           | 7 | "      | "       | "          | 50" | Fair | Med.       | 80%       | "  | "      | "                             | 0 7 100 0 0 | "         |
| Dwarf Milo     | 7 | "      | "       | "          | 26" | Good | "          | 65%       | "  | "      | "                             | 0 7 100 0 0 | "         |
| Flax           | 7 | "      | "       | "          | 30" | "    | None       | "         | "  | "      | "                             | 0 7 100 0 0 | "         |
| Winter Vetch   | 7 | "      | "       | "          | "   | "    | "          | "         | "  | "      | "                             | "           | "         |

| Plant                   | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment                | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged               | Shattered | Growing<br>Season | No. Times<br>Predominant | Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract      | Remarks |
|-------------------------|---------------------------------|-----------------|------------------|-----------------|----------------------------------|-------------------|----------------------|-----------------|-------------------|----------------------|-----------|-------------------|--------------------------|-------------------------|---------|---------------------------|---------|------------|---------|
| Observation Number XI   |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
| Buckwheat               |                                 |                 |                  |                 | 2000 Lime<br>250 Ferti-<br>lizer | 24"               | Fair                 | Sm.             | 100%              | No                   | Partly    | Wet               | 0                        | 2                       | 67      | 1                         | 33      | Glassboro  |         |
| German Millet           | 3                               | May 19          | Sept. 3          | Mix. 3          |                                  | 34"               | Good                 | Med.            | 100%              | "                    | No        | "                 | 3                        | 3                       | 100     | 0                         | 0       | "          |         |
| Minn. Sorghum           | 3                               | "               | "                | "               | "                                | 48"               | Fair                 | "               | 75%               | "                    | "         | "                 | 0                        | 1                       | 33      | 2                         | 67      | "          |         |
| Greeley Kaffir          | 3                               | "               | "                | "               | "                                | 60"               | Good                 | "               | 75%               | "                    | "         | "                 | 0                        | 1                       | 33      | 2                         | 67      | "          |         |
| Sudan Grass             | 3                               | "               | "                | "               | "                                | 54"               | "                    | "               | 80%               | "                    | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Soy Beans               | 3                               | "               | "                | "               | "                                | 24"               | "                    | "               | 75%               | "                    | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Cow Peas                | 3                               | "               | "                | "               | "                                | 26"               | "                    | "               | 75%               | "                    | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Rape                    | 3                               | "               | "                | "               | "                                | 6"                | Fair                 | None            | "                 | "                    | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Dwarf Milo              | 3                               | "               | "                | "               | "                                | 36"               | "                    | Sm.             | 75%               | "                    | "         | "                 | 0                        | 2                       | 67      | 1                         | 33      | "          |         |
| Flax                    | 3                               | "               | "                | "               | "                                | 28"               | Good                 | Med.            | 75%               | "                    | "         | "                 | 0                        | 3                       | 100     | 0                         | 0       | "          |         |
| Winter Vetch            | 3                               | "               | "                | "               | "                                | 30"               | "                    | None            | "                 | "                    | "         | "                 | 0                        | 2                       | 67      | 1                         | 33      | "          |         |
| Observation Number XII  |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
| Buckwheat               |                                 |                 |                  |                 | 1100 Lime<br>140 Ferti-<br>lizer | 30"               | Good                 | Med.            | 100%              | No                   | Partly    | Wet               | 0                        | 2                       | 100     | 0                         | 0       | Glassboro  |         |
| German Millet           | 2                               | May 15          | Sept. 4          | Mix. 3          |                                  | 42"               | "                    | "               | 90%               | "                    | No        | "                 | 2                        | 2                       | 100     | 0                         | 0       | "          |         |
| Minn. Sorghum           | 2                               | "               | "                | "               | "                                | 72"               | "                    | "               | 75%               | "                    | "         | "                 | 0                        | 1                       | 50      | 1                         | 50      | "          |         |
| Greeley Kaffir          | 2                               | "               | "                | "               | "                                | 63"               | "                    | "               | 75%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Sudan Grass             | 2                               | "               | "                | "               | "                                | 54"               | "                    | "               | 90%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Soy Beans               | 2                               | "               | "                | "               | "                                | 24"               | "                    | "               | 75%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Cow Peas                | 2                               | "               | "                | "               | "                                | 24"               | "                    | Sm.             | 75%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Rape                    | 2                               | "               | "                | "               | "                                | 9"                | Fair                 | None            | "                 | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Dwarf Milo              | 2                               | "               | "                | "               | "                                | 39"               | Good                 | Med.            | 75%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Flax                    | 2                               | "               | "                | "               | "                                | 24"               | "                    | Sm.             | 75%               | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Winter Vetch            | 2                               | "               | "                | "               | "                                | 27"               | "                    | None            | "                 | "                    | "         | "                 | 0                        | 2                       | 100     | 0                         | 0       | "          |         |
| Observation Number XIII |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
| Buckwheat               |                                 |                 |                  |                 | 1500 Lime<br>300 Ferti-<br>lizer | 28"               | Good                 | Lg.             | 100%              | Partly               | Slightly  | Dry               | 0                        | 1                       | 100     | 0                         | 0       | Haleyville |         |
| German Millet           | 1                               | May 18          | Sept. 11         | Mix. 3          |                                  | 38"               | "                    | "               | 95%               | "                    | "         | "                 | 1                        | 1                       | 100     | 0                         | 0       | "          |         |
| Minn. Sorghum           | 1                               | "               | "                | "               | "                                | 60"               | "                    | Med.            | 90%               | No                   | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Greeley Kaffir          | 1                               | "               | "                | "               | "                                | 40"               | "                    | Lg.             | 100%              | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Sudan Grass             | 1                               | "               | "                | "               | "                                | 58"               | "                    | Med.            | 95%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Soy Beans               | 1                               | "               | "                | "               | "                                | 18"               | "                    | "               | 90%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Cow Peas                | 1                               | "               | "                | "               | "                                | 17"               | "                    | "               | 90%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Rape                    | 1                               | "               | "                | "               | "                                | 14"               | "                    | "               | "                 | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Dwarf Milo              | 1                               | "               | "                | "               | "                                | 31"               | "                    | "               | 90%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Flax                    | 1                               | "               | "                | "               | "                                | 18"               | "                    | "               | 95%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Winter Vetch            | 1                               | "               | "                | "               | "                                | 13"               | "                    | "               | "                 | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Observation Number XIV  |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
| Buckwheat               | 1                               | May 19          | Sept. 11         | Mix. 3          | 300 Ferti-<br>lizer              | 23"               | Good                 | Med.            | 95%               | Partly               | Partly    | Dry               | 1                        | 1                       | 100     | 0                         | 0       | Haleyville |         |
| German Millet           | 1                               | "               | "                | "               | "                                | 30"               | "                    | "               | 95%               | Slightly             | Slightly  | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Minn. Sorghum           | 1                               | "               | "                | "               | "                                | 48"               | "                    | "               | 90%               | No                   | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Greeley Kaffir          | 1                               | "               | "                | "               | "                                | 38"               | Fair                 | "               | 90%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Sudan Grass             | 1                               | "               | "                | "               | "                                | 56"               | Good                 | Lg.             | 95%               | Slightly             | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Soy Beans               | 1                               | "               | "                | "               | "                                | 15"               | Fair                 | Med.            | 90%               | No                   | No        | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Cow Peas                | 1                               | "               | "                | "               | "                                | 16"               | "                    | "               | 90%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Rape                    | 1                               | "               | "                | "               | "                                | 13"               | "                    | "               | "                 | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Dwarf Milo              | 1                               | "               | "                | "               | "                                | 28"               | "                    | "               | 90%               | "                    | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Flax                    | 1                               | "               | "                | "               | "                                | 14"               | "                    | "               | 95%               | Partly               | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Winter Vetch            | 1                               | "               | "                | "               | "                                | 12"               | "                    | "               | "                 | No                   | "         | "                 | 0                        | 1                       | 100     | 0                         | 0       | "          |         |
| Year—1938               |                                 |                 |                  |                 |                                  |                   |                      |                 |                   | Sassafras Sandy Loam |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
|                         |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |
| </                      |                                 |                 |                  |                 |                                  |                   |                      |                 |                   |                      |           |                   |                          |                         |         |                           |         |            |         |

# Observation Number XV

|                |   |        |         | 1500 Lime  |      |      |  |  |  |
|----------------|---|--------|---------|------------|------|------|--|--|--|
|                |   |        |         | 300 Ferti- |      |      |  |  |  |
|                |   |        |         | lizer      |      |      |  |  |  |
| Buckwheat      |   |        |         | 24"        | Good | Lg.  |  |  |  |
| German Millet  | 3 | May 17 | Sept. 9 | 33"        | "    | "    |  |  |  |
| Minn. Sorghum  | 3 | "      | "       | 45"        | "    | Med. |  |  |  |
| Greeley Kaffir | 3 | "      | "       | 41"        | "    | Lg.  |  |  |  |
| Sudan Grass    | 3 | "      | "       | 48"        | "    | Med. |  |  |  |
| Soy Beans      | 3 | "      | "       | 17"        | "    | "    |  |  |  |
| Cow Peas       | 3 | "      | "       | 17"        | "    | "    |  |  |  |
| Rape           | 3 | "      | "       | 13"        | "    | "    |  |  |  |
| Dwarf Milo     | 3 | "      | "       | 28"        | "    | "    |  |  |  |
| Flax           | 3 | "      | "       | 15"        | "    | "    |  |  |  |
| Winter Vetch   | 3 | "      | "       | 12"        | "    | "    |  |  |  |

# Observation Number XVI

|                |   |        |         | 1500 Lime  |      |      |  |  |  |
|----------------|---|--------|---------|------------|------|------|--|--|--|
|                |   |        |         | 300 Ferti- |      |      |  |  |  |
|                |   |        |         | lizer      |      |      |  |  |  |
| Buckwheat      |   |        |         | 24"        | Good | Lg.  |  |  |  |
| German Millet  | 3 | May 14 | Sept. 9 | 22"        | Fair | Med. |  |  |  |
| Minn. Sorghum  | 3 | "      | "       | 34"        | "    | Sm.  |  |  |  |
| Greeley Kaffir | 3 | "      | "       | 32"        | "    | "    |  |  |  |
| Sudan Grass    | 3 | "      | "       | 37"        | "    | "    |  |  |  |
| Soy Beans      | 3 | "      | "       | 15"        | "    | Med. |  |  |  |
| Cow Peas       | 3 | "      | "       | 14"        | "    | "    |  |  |  |
| Rape           | 3 | "      | "       | 10"        | Good | "    |  |  |  |
| Dwarf Milo     | 3 | "      | "       | 26"        | Fair | Sm.  |  |  |  |
| Flax           | 3 | "      | "       | 14"        | "    | Med. |  |  |  |
| Winter Vetch   | 3 | "      | "       | 10"        | Poor | "    |  |  |  |

# Observation Number XVII

|                |   |        |         | 1500 Lime  |      |      |  |  |  |
|----------------|---|--------|---------|------------|------|------|--|--|--|
|                |   |        |         | 300 Ferti- |      |      |  |  |  |
|                |   |        |         | lizer      |      |      |  |  |  |
| Buckwheat      |   |        |         | 24"        | Good | Med. |  |  |  |
| German Millet  | 1 | May 14 | Sept. 7 | 34"        | "    | Lg.  |  |  |  |
| Minn. Sorghum  | 1 | "      | "       | 48"        | Fair | Med. |  |  |  |
| Greeley Kaffir | 1 | "      | "       | 38"        | Good | Lg.  |  |  |  |
| Sudan Grass    | 1 | "      | "       | 40"        | Fair | Med. |  |  |  |
| Soy Beans      | 1 | "      | "       | 14"        | "    | "    |  |  |  |
| Cow Peas       | 1 | "      | "       | 15"        | "    | "    |  |  |  |
| Rape           | 1 | "      | "       | 12"        | "    | "    |  |  |  |
| Dwarf Milo     | 1 | "      | "       | 30"        | "    | Sm.  |  |  |  |
| Flax           | 1 | "      | "       | 14"        | Good | Med. |  |  |  |

# Observation Number XVIII

|                |   |        |          | 300 Ferti- |      |          |  |  |  |
|----------------|---|--------|----------|------------|------|----------|--|--|--|
|                |   |        |          | lizer      |      |          |  |  |  |
| Buckwheat      | 3 | May 15 | Sept. 10 | 24"        | Good | Med.     |  |  |  |
| German Millet  | 3 | "      | "        | 28"        | "    | "        |  |  |  |
| Minn. Sorghum  | 3 | "      | "        | 48"        | "    | "        |  |  |  |
| Greeley Kaffir | 3 | "      | "        | 40"        | Fair | Sm.      |  |  |  |
| Sudan Grass    | 3 | "      | "        | 50"        | Good | Med.     |  |  |  |
| Soy Beans      | 3 | "      | "        | 17"        | "    | "        |  |  |  |
| Cow Peas       | 3 | "      | "        | 16"        | "    | "        |  |  |  |
| Rape           | 3 | "      | "        | 13"        | "    | "        |  |  |  |
| Dwarf Milo     | 3 | "      | "        | 30"        | Fair | Med. Sm. |  |  |  |
| Flax           | 3 | "      | "        | 15"        | Good | Med.     |  |  |  |
| Winter Vetch   | 3 | "      | "        | 14"        | "    | "        |  |  |  |

# Year—1939

|     |          |          |
|-----|----------|----------|
| 98% | Partly   | Partly   |
| 95% | No       | No       |
| 95% | Partly   |          |
| 90% | Slightly | Slightly |
| 85% | Partly   |          |
| 85% | No       | No       |
| 85% |          |          |
| 90% | Slightly |          |
| 90% | Partly   |          |
|     | No       |          |

# Sassafras Gravelly Sandy Loam

|     |   |   |     |   |   |            |
|-----|---|---|-----|---|---|------------|
| Dry | 2 | 3 | 100 | 0 | 0 | Haleyville |
| "   | 1 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |

# Year—1939

|      |          |          |
|------|----------|----------|
| 100% | Partly   | Partly   |
| 90%  | Slightly | Slightly |
| 90%  | No       | No       |
| 90%  | "        | "        |
| 85%  | "        | "        |
| 90%  | "        | "        |
| 90%  | "        | "        |
| 90%  | "        | "        |
| 90%  | "        | "        |
| 90%  | "        | "        |
| 90%  | "        | "        |

# Sassafras Sand

|     |   |   |     |   |    |            |
|-----|---|---|-----|---|----|------------|
| Dry | 3 | 3 | 100 | 0 | 0  | Haleyville |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 2 | 67  | 1 | 33 | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |
| "   | 0 | 3 | 100 | 0 | 0  | "          |

# Year—1939

|     |          |          |
|-----|----------|----------|
| 95% | Partly   | Slightly |
| 90% | No       | No       |
| 85% | Slightly | "        |
| 90% | No       | "        |
| 80% | "        | "        |
| 85% | "        | "        |
| 80% | "        | "        |
| 85% | "        | "        |
| 80% | "        | "        |

# Sassafras Sandy Loam

|     |   |   |     |   |   |            |
|-----|---|---|-----|---|---|------------|
| Dry | 1 | 1 | 100 | 0 | 0 | Haleyville |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |
| "   | 0 | 1 | 100 | 0 | 0 | "          |

# Year—1939

|     |          |          |
|-----|----------|----------|
| 98% | Partly   | Partly   |
| 90% | Slightly | Slightly |
| 90% | "        | No       |
| 90% | No       | "        |
| 85% | "        | "        |
| 90% | "        | "        |
| 85% | "        | "        |
| 90% | "        | "        |
| 95% | Slightly | "        |
|     | No       | "        |

# Sassafras Gravelly Sandy Loam

|     |   |   |     |   |   |            |
|-----|---|---|-----|---|---|------------|
| Dry | 3 | 3 | 100 | 0 | 0 | Haleyville |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |
| "   | 0 | 3 | 100 | 0 | 0 | "          |



| Plant                  | Number<br>Plantings<br>Observed | Date<br>Planted | Date<br>Observed | Seed<br>Planted | Soil<br>Treatment | Average<br>Height | General<br>Condition | Seed<br>Cluster | Degree<br>Matured | Lodged | Shattered           | Growing<br>Season | No. Times<br>Predominant<br>Successful<br>Plantings | Percent | Unsuccessful<br>Plantings | Percent | Tract | Remarks    |  |
|------------------------|---------------------------------|-----------------|------------------|-----------------|-------------------|-------------------|----------------------|-----------------|-------------------|--------|---------------------|-------------------|-----------------------------------------------------|---------|---------------------------|---------|-------|------------|--|
| Observation Number XIX |                                 |                 |                  |                 |                   |                   |                      |                 | Year—1939         |        | Scranton Sandy Loam |                   |                                                     |         |                           |         |       |            |  |
|                        |                                 |                 |                  |                 | 1500 Lime         |                   |                      |                 |                   |        |                     |                   |                                                     |         |                           |         |       |            |  |
|                        |                                 |                 |                  |                 | 300 Ferti-        |                   |                      |                 |                   |        |                     |                   |                                                     |         |                           |         |       |            |  |
| Buckwheat              | 2                               | May 28          | Sept 12          | Mix. 3          | lizer             | 25"               | Fair                 | Med.            | 95%               | Partly | Partly              | Dry               | 1                                                   | 2       | 100                       | 0       | 0     | Manahawkin |  |
| German Millet          | "                               | "               | "                | "               | "                 | 39"               | Good                 | "               | 95%               | No     | No                  | "                 | 0                                                   | 0       | 100                       | 0       | 0     | "          |  |
| Minn. Sorghum          | "                               | "               | "                | "               | "                 | 54"               | "                    | Smut Med.       | 90%               | "      | "                   | "                 | 0                                                   | 0       | 100                       | 0       | 0     | "          |  |
| Greeley Kaffir         | "                               | "               | "                | "               | "                 | 51"               | "                    | "               | 83%               | "      | "                   | "                 | 0                                                   | 0       | 100                       | 0       | 0     | "          |  |
| Sudan Grass            | "                               | "               | "                | "               | "                 | 57"               | "                    | Med.            | 90%               | "      | "                   | "                 | 0                                                   | 0       | 100                       | 0       | 0     | "          |  |
| Soy Beans              | "                               | "               | "                | "               | "                 | 16"               | Fair                 | "               | 80%               | "      | "                   | "                 | 0                                                   | 0       | 100                       | 0       | 0     | "          |  |
| Cow Peas               | "                               | "               | "                | "               | "                 | 16"               | "                    | "               | 60%               | "      | "                   | "                 | 0                                                   | 0       | 100                       | 0       | 0     | "          |  |
| Rape                   | "                               | "               | "                | "               | "                 | "                 | Failure              | "               | "                 | "      | "                   | "                 | 0                                                   | 0       | 0                         | 2       | 100   | "          |  |
| Dwarf Milo             | "                               | "               | "                | "               | "                 | "                 | "                    | "               | "                 | "      | "                   | "                 | 0                                                   | 0       | 0                         | 2       | 100   | "          |  |
| Flax                   | "                               | "               | "                | "               | "                 | 15"               | Good                 | "               | 100%              | "      | "                   | "                 | 0                                                   | 2       | 100                       | 0       | 0     | "          |  |
| Winter Vetch           | "                               | "               | "                | "               | "                 | 12"               | Fair                 | "               | "                 | "      | "                   | "                 | 0                                                   | 2       | 100                       | 0       | 0     | "          |  |

## Observation Number XX

| Plantation Number 111 |   |        |          | 1000 Lime<br>300 Fe. ti- |     |         |          | Year—1955 |    |        |     | Sassaparilla Sand |   |     |   |     |         |
|-----------------------|---|--------|----------|--------------------------|-----|---------|----------|-----------|----|--------|-----|-------------------|---|-----|---|-----|---------|
| Buckwheat             | 5 | May 12 | Sept. 14 | Mix. 3                   | 21" | Good    | Med.     | 100%      | No | Partly | Dry | 1                 | 4 | 80  | 1 | 20  | Tuckahe |
| German Millet         | 5 | "      | "        | "                        | 24" | "       | "        | 95%       | "  | No     | "   | 1                 | 4 | 80  | 1 | 20  | "       |
| Minn. Sorghum         | 5 | "      | "        | "                        | 46" | "       | "        | 90%       | "  | "      | "   | 1                 | 5 | 100 | 0 | 0   | "       |
| Greeley Kaffir        | 5 | "      | "        | "                        | 42" | "       | "        | 90%       | "  | "      | "   | 0                 | 5 | 100 | 0 | 0   | "       |
| Sudan Grass           | 5 | "      | "        | "                        | 52" | "       | "        | 92%       | "  | "      | "   | 0                 | 5 | 100 | 0 | 0   | "       |
| Soy Beans             | 5 | "      | "        | "                        | 16" | Fair    | Med. Lg. | 95%       | "  | "      | "   | 0                 | 5 | 100 | 0 | 0   | "       |
| Cow Peas              | 5 | "      | "        | "                        | 13" | Good    | Med.     | 95%       | "  | "      | "   | 0                 | 4 | 80  | 1 | 20  | "       |
| Rape                  | 5 | "      | "        | "                        | 10" | "       | "        | "         | "  | "      | "   | 0                 | 5 | 100 | 0 | 0   | "       |
| Dwarf Milo            | 5 | "      | "        | "                        | "   | Failure | "        | "         | "  | "      | "   | 0                 | 0 | 0   | 5 | 100 | "       |
| Flax                  | 5 | "      | "        | "                        | 14" | Good    | "        | 95%       | "  | "      | "   | 0                 | 5 | 100 | 0 | 0   | "       |
| Winter Vetch          | 5 | "      | "        | "                        | 18" | "       | "        | "         | "  | "      | "   | 0                 | 5 | 100 | 0 | 0   | "       |

### Observation Number XXI

| 2000 Lime<br>500 Ferti-<br>lizer |    |        |         |        |     |      |      |             |          |          | Subsidiary Sandy Loam |   |    |     |   |    |           |  |  |  |  |
|----------------------------------|----|--------|---------|--------|-----|------|------|-------------|----------|----------|-----------------------|---|----|-----|---|----|-----------|--|--|--|--|
| Buckwheat                        | 17 | May 22 | Oct. 12 | Mix. 3 | 32" | Good | Med. | 100%        | Partly   | Partly   | Dry                   | 0 | 17 | 100 | 0 | 0  | Glassboro |  |  |  |  |
| German Millet                    | 17 | "      | "       | "      | 31" | Fair | Sm.  | 100%        | No       | No       | "                     | 1 | 16 | 94  | 1 | 6  | "         |  |  |  |  |
| Minn. Sorghum                    | 17 | "      | "       | "      | 50" | Good | Med. | 100%        | Slightly | "        | "                     | 1 | 17 | 100 | 0 | 0  | "         |  |  |  |  |
| Greeley Kaffir                   | 17 | "      | "       | "      | 46" | "    | "    | 90%         | "        | "        | "                     | 2 | 15 | 88  | 2 | 12 | "         |  |  |  |  |
| Sudan Grass                      | 17 | "      | "       | "      | 57" | "    | "    | 90%         | "        | Slightly | "                     | 0 | 17 | 100 | 0 | 0  | "         |  |  |  |  |
| Soy Beans                        | 17 | "      | "       | "      | 13" | Fair | Sm.  | 100%        | No       | No       | "                     | 0 | 13 | 76  | 4 | 24 | "         |  |  |  |  |
| Cow Peas                         | 17 | "      | "       | "      | 20" | Good | Med. | Frosted 95% | "        | "        | "                     | 0 | 17 | 100 | 0 | 0  | "         |  |  |  |  |
| Rape                             | 17 | "      | "       | "      | 9"  | "    | "    | "           | "        | "        | "                     | 0 | 17 | 100 | 0 | 0  | "         |  |  |  |  |
| Dwarf Milo                       | 17 | "      | "       | "      | 34" | Fair | Sm.  | 100%        | "        | "        | "                     | 0 | 17 | 100 | 0 | 0  | "         |  |  |  |  |
| Flax                             | 17 | "      | "       | "      | 18" | Good | Med. | 90%         | "        | "        | "                     | 0 | 17 | 100 | 0 | 0  | "         |  |  |  |  |
| Winter Vetch                     | 17 | "      | "       | "      | 26" | "    | "    | "           | "        | "        | "                     | 0 | 17 | 100 | 0 | 0  | "         |  |  |  |  |

During 1938 seven observational areas containing a total of 15 food patches, were planted in the Appalachian Valley Region. Five soil types were represented. Lime and fertilizer were applied in all instances. Due to severe frosts, the majority of patches failed. Observational areas No. 2 and No. 7, containing a total of 6 patches, produced satisfactory results.

Two observational areas containing a total of 23 food patches, were planted in the Piedmont Plain Region. A single soil type was represented. Eighteen of the patches received an application of fertilizer and five received no treatment. Results were generally satisfactory.

Twelve observational areas were created in the Coastal Plain Region containing a total of 48 food patches. Six soil types were represented. Forty four patches received applications of lime and fertilizer. Four patches received only fertilizer. Results were generally acceptable.

Subsequent utilization of this mixture indicates that good results can be obtained if it is used in the lower Highland, Piedmont Plain, and Coastal Plain regions. Climatic conditions encountered in the upper Highland Region and Appalachian Valley Region prevents maturation of the Dwarf Milo.

In addition to the above listed mixtures it is sometimes desirable and practical to plant plots of each grain separately. Such procedure entails more time, adequate equipment, increased labor, larger available area, more seed and fertilizer and in some instances subsequent cultivation. Seed production is usually profuse under this type of food patch installation. The following grains and seeds have been planted throughout New Jersey with satisfactory results.

### Yellow Corn

Annual plantings of this desirable grain are made on the pheasant areas in the Piedmont and Appalachian Regions of New Jersey. To date plantings have been confined to yellow dent corn and variations thereof. It is suggested that the recommendations of the local county agent as to kind and time of planting, be followed by those interested in planting corn for food patch purposes.

Corn cannot be planted broadcast but must be planted in rows; it must be fertilized and cultivated. Good results can be obtained from plantings made on good soil in the Appalachian, Highland, and Piedmont Plain regions, plus that portion of the Coastal Plain Region that is located adjacent to the Delaware River and referred to as the heavy Coastal Plain. It can be produced in the light Coastal Plain Region but production is less satisfactory.

In addition to furnishing an adequate food supply to the bulk of New Jersey's game life a corn patch offers a source of food for winter feeding in other areas. Part of the crop can be removed and stored for this purpose.

Corn patches if planted adjacent to large woods can suffer severely from the onslaught of squirrels. It is believed that the patch should not be smaller than 1 acre in area. The broadcasting of buckwheat and Sudan grass at the time of the last cultivation seems to enhance the cornfield as far as pheasant utilization is concerned.

### German Millet

This plant can be produced satisfactorily in all parts of New Jersey. Best results are obtained when fertilized. It is especially productive throughout the Coastal Plain Region and is highly utilized by the Bobwhite.

The seed is broadcast on a well prepared seed bed at a rate of 25 lbs. per acre. It is recommended that patches be one half acre in size.

The same results can be obtained from Golden millet and common millet, although these plants have been used to a lesser extent in this State.

German and Golden millet stand up well particularly in southern New Jersey. It maintains a fair seed supply in the heads well into the spring. The patches are utilized heavily by Bobwhite and evidences of pheasant utilization have been observed.

A MILLET PATCH



Japanese millet, Early Fortune millet, Red Lump proso, and Yellow Serepta proso are especially productive in the Coastal Plain Region, but have been satisfactorily produced in all the physiographic regions of New Jersey. These plants shatter early in New Jersey but the utilization of patches of this type has been heavy, by Bobwhite, through the entire winter and well into the spring. Instances of pheasant utilization have also been noted. Many small birds frequent patches of these grains.

To grow any of the above types of proso, good results can be obtained by planting at a rate of 25 lbs. of seed per acre on a well prepared seed bed. The recommended size of the patch is one half acre. Best results are received when the patch is fertilized.

### Minnesota Sorghum (*Waconia amber*)

This plant has been produced satisfactorily throughout the State when planted either in rows or broadcast in patches. Occasionally in the short growing season of the Appalachian Valley Region the plant failed to

mature. However, the growing seasons south of the Appalachian Valley Region are of sufficient duration to allow maturation of the plant.

When row planted and cultivated, seed production is generally excellent. However it is thought that when facilities for row planting and cultivating are available the creation of food facilities can be better served by the planting of yellow corn or sweet corn.

In broadcasting, best results were received from areas of only slight acidity with an application of 5-8-7 fertilizer at a rate of 250 lbs. per acre. The rate of seeding when broadcast is 14 lbs. per acre.

Minnesota Sorghum holds its seeds well but is inclined to lodge early and to a heavy degree. It is utilized by Bobwhite and the pheasant and is regarded as a good food plant.

Deer seriously impair the efficiency of the plantings as they find the heads of grain particularly desirable after they have matured. In addition, plantings have suffered severely from smut and it is desirable to treat the seed against this fungus.

A SORGHUM PATCH



#### Orange Sorghum

This sorghum has been used in the Coastal Plain Region and Piedmont Plain Region with good results. Plantings made in the Highland and Appalachian Valley Regions failed to mature.

Orange sorghum holds its seeds well and lodges at a later date than Minnesota sorghum. It seems to receive heavier utilization from the pheasant than Minnesota sorghum.

It is planted at the same rate and under the same conditions advocated for Minnesota sorghum.

#### Lespedeza Sericea

Considerable effort was expended in the growing of various Lespedezas particularly in the Coastal Plain Region, and in 1937 it was indicated that Lespedeza sericea was adapted to southern New Jersey. Since that

time this valuable legume has been successfully grown and stands are being maintained in Piedmont Plain areas of Hunterdon and Warren Counties. The introduction of this perennial was an outstanding accomplishment in that it is particularly adapted to Coastal Plain conditions.

#### LESPEDEZA SERICEA



This perennial is being widely used in wildlife development in New Jersey

*Lespedeza sericea* has given satisfactory results if planted either in spring or in the fall.

If planted in the spring it is recommended that scarified and hulled seed be used. The rate of seeding in this instance is 18 lbs. per acre.

When planted in the fall, unhulled and unscarified seed is used and the rate of seeding is increased to 25 lbs. per acre.

It is not necessary to apply lime or fertilizer to seed beds in which *Lespedeza sericea* is to be planted. Initial growth is more satisfactory if a light application of fertilizer is applied to the seed bed.

In either case the seed must be inoculated and best results are obtained when care is given to seed bed preparation. The seed is broadcast by hand and is not harrowed in, the covering of the seed being accomplished by wind and rain. However if the planted seed bed is rolled, the ensuing stand is more even and growth is more satisfactory.

In New Jersey *Lespedeza sericea* will attain a height of 4 inches to 14 inches the first growing season with very little seed production. However at the conclusion of the second growing season a height of 20 inches to 48 inches is reached and seed production is profuse.

#### Soy Beans and Cow Peas

These plants are widely used by pheasants, quail, rabbits and deer. They can be advantageously planted when the lateness of the planting season makes it impractical to plant the food patch mixtures.



Best results are gained when soil is carefully prepared and limed and fertilized. The seed is broadcast at a rate of 35 lbs. per acre. Seed inoculation is necessary. After broadcasting, the seed bed is harrowed to insure coverage of the seed.

It has been noted that the seeds of the above plants become moldy during late fall and early winter with an accompanying reduction in utilization by birds.

#### Tartary Buckwheat

This plant when planted in July, produces a desirable food supply that lasts well into the winter in New Jersey. It receives high utilization and is especially valuable in southern New Jersey.

After having carefully produced a good seed bed the seed is broadcast at a rate of 36 lbs. per acre. Coverage of the seed is accomplished by a light harrowing of the area after broadcasting. The seed bed should receive a treatment of fertilizer of about 200 lbs. per acre.

If planted in areas of large deer populations, plantings of buckwheat seldom reach maturity.

#### Rye

Rye grows well and creates a food of high utilization throughout the State. During the late fall, winter, and early spring, deer find rye patches very desirable. Subsequent seed production finds quail and pheasants using the planting.

It must be planted in the fall in a well prepared seed bed, with an application of 200 lbs. of fertilizer per acre. The seed is broadcast at the rate of 1½ bushels per acre and the seed harrowed in to insure coverage.

#### Wild Bean (*Stropostyles helvola*)

The plowing and disking of certain fields in some instances results in an excellent growth of wild bean. Such areas when created are utilized by Bobwhite.

The following is a resume of the plantings made during the interval of 1934-1940 on State owned lands:

| Year          | Food Patch<br>Mixtures | Miscellaneous<br>Seeds | Total       |
|---------------|------------------------|------------------------|-------------|
| 1934-35 ..... | 61                     | ..                     | 61          |
| 1935-36 ..... | 113                    | ..                     | 113         |
| 1936-37 ..... | 156                    | 16                     | 172         |
| 1937-38 ..... | 138                    | 122                    | 260         |
| 1938-39 ..... | 193                    | 267                    | 460         |
| 1939-40 ..... | 151                    | 368                    | 519         |
|               | <hr/> 812              | <hr/> 773              | <hr/> 1,585 |

The planting of miscellaneous seeds included Lespedeza sericea, rye, soy beans, cow peas, corn, Jerusalem artichoke, Orange sorghum, Dakota sorghum, Dwarf milo, Amber sorghum, buckwheat, several millets, Sudan grass, and milo.

In addition to the above mentioned, it has been customary to make annual plantings in cooperation with various sportsmen's clubs in New Jersey. During the spring of 1940 this activity reached an all-time high at which time 267 patches were planted on lands open to hunting throughout the State.

#### EVIDENCES OF FOOD PATCH UTILIZATION

Utilization of the patches by various fauna was made by direct observation in most instances. During the hunting season it sometimes has been possible to secure crops or crop contents from birds shot on areas containing food patches. The small amount of data compiled to date is listed below:

During the 1938 small game season the crop contents of 10 Bobwhite Quail were collected on the Haleyville Public Shooting Grounds in Cumberland County through the cooperation of sportsmen using the area. The crop contents were dried and weighed. The following data was observed:

| Crop No. | Date Collected | Time of Day Collected | Sex    | Crop Contents | Dry Weight of Crop Contents |
|----------|----------------|-----------------------|--------|---------------|-----------------------------|
| 1        | 12-12          | 8:30 A.M.             | Male   | Corn          | 1.25 grams                  |
|          |                |                       |        | Ragweed       | 2.74 "                      |
| 2        | 12-12          | 8:30 A.M.             | Female | Corn          | 0.20 "                      |
|          |                |                       |        | Ragweed       | 2.00 "                      |
| 3        | 12-12          | 4:30 P.M.             | Male   | Buckwheat     | 3.51 "                      |
|          |                |                       |        | Millet        | 0.31 "                      |
| 4        | 12-12          | 4:30 P.M.             | Female | Buckwheat     | 1.50 "                      |
|          |                |                       |        | Millet        | 0.13 "                      |
| 5        | 12-12          | 4:30 P.M.             |        | Buckwheat     | 2.01 "                      |
|          |                |                       |        | Millet        | 0.01 "                      |
| 6        | 12-13          | 4:30 P.M.             | Male   | Cow peas      | 1.20 "                      |
|          |                |                       |        | Soy beans     | 0.50 "                      |
|          |                |                       |        | Buckwheat     | 0.55 "                      |
|          |                |                       |        | Sudan Grass   | 0.15 "                      |
|          |                |                       |        | Amber sorghum | 0.01 "                      |
|          |                |                       |        | Flax          | 0.01 "                      |
| 7        | 12-15          | 9:30 A.M.             | Female | Dwarf Milo    | 0.31 "                      |
|          |                |                       |        | Soy beans     | 0.42 "                      |
|          |                |                       |        | Buckwheat     | 0.10 "                      |
|          |                |                       |        | Millet        | 0.50 "                      |
| 8        | 12-15          | 9:30 A.M.             | Male   | Soy beans     | 0.52 "                      |
|          |                |                       |        | Dwarf Milo    | 0.40 "                      |
|          |                |                       |        | Millet        | 1.00 "                      |
|          |                |                       |        | Ragweed       | 0.01 "                      |
| 9        | 12-15          | 9:30 A.M.             |        | Cow peas      | 2.00 "                      |
|          |                |                       |        | Soy beans     | 0.03 "                      |
|          |                |                       |        | Dwarf Milo    | 0.52 "                      |
|          |                |                       |        | Millet        | 0.01 "                      |
|          |                |                       |        | Ragweed       | 0.01 "                      |
| 10       | 12-15          | 9:30 A.M.             |        | Soy beans     | 0.30 "                      |
|          |                |                       |        | Flax          | 0.01 "                      |
|          |                |                       |        | Millet        | 1.00 "                      |

During the 1939 upland game season a total of 29 Bobwhite crops was collected on the Haleyville Public Shooting Grounds. In this instance the amount of each seed present in the respective crop was established by actual count.

| Crop No. | Date  | Time of Collection | Sex    | Crop Contents      | Number of Seeds Present |
|----------|-------|--------------------|--------|--------------------|-------------------------|
| 1        | 11-10 | 2.45 P.M.          | Male   | Rye                | 73                      |
| 2        | 11-10 | 2:45 P.M.          | Female | Rye                | 48                      |
|          |       |                    |        | Ragweed            | 2                       |
| 3        | 11-10 | 2:45 P.M.          | Male   | Rye                | 20                      |
|          |       |                    |        | Ragweed            | 3                       |
| 4        | 11-10 | 4:00 P.M.          | Male   | Buckwheat          | 11                      |
|          |       |                    |        | Soy beans          | 6                       |
|          |       |                    |        | Kaffir corn        | 40                      |
|          |       |                    |        | Dwarf Milo         | 6                       |
|          |       |                    |        | Amber sorghum      | 15                      |
| 5        | 11-10 | 4:00 P.M.          | Female | Yellow corn        | 1                       |
|          |       |                    |        | Soy beans          | 1                       |
|          |       |                    |        | Cow peas           | 5                       |
|          |       |                    |        | Kaffir corn        | 12                      |
|          |       |                    |        | Buckwheat          | 24                      |
|          |       |                    |        | Ragweed            | 10                      |
| 6        | 11-11 | 3:00 P.M.          | Female | Ragweed            | 47                      |
|          |       |                    |        | Millet             | 388                     |
|          |       |                    |        | Wild bean          | 1                       |
|          |       |                    |        | Oyster shell       | 12                      |
|          |       |                    |        | Insects            | 2                       |
|          |       |                    |        | Unidentified Seeds | 2                       |
| 7        | 11-11 | 3:00 P.M.          | Male   | Millet             | 104                     |
|          |       |                    |        | Ragweed            | 98                      |
| 8        | 11-11 | 3:00 P.M.          | Male   | Ragweed            | 320                     |
|          |       |                    |        | Millet             | 482                     |
|          |       |                    |        | Buckwheat          | 1                       |
| 9        | 11-11 | 3:00 P.M.          | Male   | Wild bean          | 5                       |
|          |       |                    |        | Millet             | 275                     |
|          |       |                    |        | Ragweed            | 127                     |
| 10       | 11-13 | 10:45 A.M.         | Male   | Ragweed            | 59                      |
| 11       | 11-13 | 2:30 P.M.          | Female | Dwarf Milo         | 30                      |
|          |       |                    |        | Millet             | 17                      |
|          |       |                    |        | Ragweed            | 4                       |
|          |       |                    |        | Insect             | 1                       |
| 12       | 11-13 | 4:45 P.M.          | Male   | Cow peas           | 45                      |
|          |       |                    |        | Soy beans          | 8                       |
|          |       |                    |        | Buckwheat          | 8                       |
|          |       |                    |        | Smartweed          | 1                       |
| 13       | 11-14 | 8:30 A.M.          | Male   | Broom Corn Millet  | 387                     |
|          |       |                    |        | Flax               | 1                       |
|          |       |                    |        | Soy beans          | 12                      |
|          |       |                    |        | Buckwheat          | 9                       |
|          |       |                    |        | Kaffir Corn        | 8                       |
|          |       |                    |        | Ragweed            | 2                       |
|          |       |                    |        | Insect             | 1                       |
| 14       | 11-15 | 10:00 A.M.         | Male   | Lespedeza sericea  | 112                     |
|          |       |                    |        | Buckwheat          | 66                      |
|          |       |                    |        | Ragweed            | 478                     |
|          |       |                    |        | Smartweed          | 2                       |
|          |       |                    |        | Partridge pea      | 8                       |
| 15       | 11-15 | 4:10 P.M.          | Male   | Ragweed            | 247                     |
| 16       | 11-15 | 4:10 P.M.          | Male   | Ragweed            | 542                     |

| Crop No. | Date  | Time of Collection | Sex    | Crop Contents     | Number of Seeds Present |
|----------|-------|--------------------|--------|-------------------|-------------------------|
| 17       | 11-15 | 4:10 P.M.          | Male   | Ragweed           | 678                     |
|          |       |                    |        | Wild bean         | 1                       |
|          |       |                    |        | Unidentified      | 2                       |
| 18       | 11-16 | 11:00 A.M.         | Female | Broom Corn Millet | 870                     |
|          |       |                    |        | Amber sorghum     | 19                      |
|          |       |                    |        | Kaffir corn       | 16                      |
|          |       |                    |        | Buckwheat         | 13                      |
|          |       |                    |        | Sudan grass       | 5                       |
| 19       | 11-16 | 4:00 P.M.          |        | Millet            | 351                     |
|          |       |                    |        | Ragweed           | 214                     |
|          |       |                    |        | Tick trefoil      | 1                       |
|          |       |                    |        | Insect            | 1                       |
| 20       | 11-16 | 4:00 P.M.          |        | Ragweed           | 504                     |
|          |       |                    |        | Buckwheat         | 43                      |
|          |       |                    |        | Wild bean         | 35                      |
|          |       |                    |        | Partridge pea     | 19                      |
|          |       |                    |        | Dakota sorghum    | 2                       |
|          |       |                    |        | Millet            | 7                       |
|          |       |                    |        | Panicum           | 1                       |
|          |       |                    |        | Orange sorghum    | 1                       |
| 21       | 11-25 | 2:00 P.M.          |        | Ragweed           | 164                     |
|          |       |                    |        | Wild bean         | 47                      |
|          |       |                    |        | Wild buckwheat    | 4                       |
| 22       | 11-25 | 2:00 P.M.          |        | Ragweed           | 397                     |
|          |       |                    |        | Wild bean         | 17                      |
|          |       |                    |        | Wild buckwheat    | 1                       |

On November 10, 1936, three crops from ringneck pheasants were collected on the Tuckahoe Area. The listing is as follows:

| Crop No. | Date Collected | Sex  | Dry Weight | Contents Listed in Order of Predominance                   |
|----------|----------------|------|------------|------------------------------------------------------------|
| 1        | 11-10          | Male | 17 grams   | Millet, buckwheat, Kaffir, Vetch, and Sudan grass.         |
| 2        | 11-10          | Male | 15 "       | Kaffir, Amber sorghum, Sudan grass and millet.             |
| 3        | 11-10          | Male | 32 "       | Kaffir, Amber sorghum, millet, Sudan grass, and Buckwheat. |

The installation of food facilities in the proximity of adequate cover creates an area of high utilization by certain wildlife species. The evident drawing power of the food patch makes it imperative that food patch locations in the majority of cases be established on refuge areas.

#### PROGRESS OF ENVIRONMENTAL DEVELOPMENT

The game management program sponsored by the New Jersey State Fish and Game Commission since 1934 includes within its scope the maintenance and increase of wildlife environment throughout the State, the creation and maintenance of adequate seed stock on land suitable for wildlife production, the rehabilitation, restoration, and development of wildlife habitats on lands of low economic value, and the imparting of advice and cooperation to those individuals, parties, or groups interested in the conservation, production, and utilization of wildlife. In addition

the acquisition, maintenance, and development of Public Shooting Grounds has received major action and the carrying out of investigational projects designed to improve management technique has been a necessary adjunct to the activities of the game management division. The following data represents a resume of the accomplishments attained up to July 1, 1940.

#### DEVELOPMENT IN THE COASTAL PLAIN REGION

It is well to note that the comparatively small area of New Jersey (approximately 4,804,570 acres), contains the second most dense population in the United States of America. Despite this population density, there exists in almost an unbroken unit, over one million acres supporting brush and woodland that can be regarded as a wilderness area.

Soils of light texture and low organic matter render a greater portion of this region unsuited for agriculture. Topography varies from a terrain that is flat to one that is gently rolling with the general elevation being low. Climate is regarded as being temperate and rainfall adequate. Streams occur at regular intervals, are moderately sluggish, and produce extensive swamp lands.

The vegetation of the upland has been influenced by fire and misuse thus causing varied stands of mixed oaks and pines, of several ages, degrees of growth, and quality. Some of the general species of woodland growth found on the upland are chestnut oak (*Quercus prinoides*), Black oak (*Quercus velutina*), Red oak (*Quercus rubra*), Jersey Pine (*Pinus echinata*), and Pitch pine (*Pinus rigida*). Often undergrowth such as Laurel (*Kalmia augustifolia*), Greenbrier (*Smilax* sp.), Sweet Fern (*Comptonia asplenifolia*), Wintergreen berry (*Gaultheria procumbens*) and Huckleberry (*Vaccinium vergatum*), is present. The swamplands contain profuse vegetation in the form of White cedar (*Chamaecyparis thyoides*), Magnolia (*Magnolia virginiana*), Red Maple (*Acer rubrum*), Black gum (*Nyssa sylvatica*), Holly (*Ilex opaca*), Red Gum (*Liquidambar styraciflua*), White oak (*Quercus bicolor*), Witherod (*Viburnum nudum*), Poison sumac (*Rhus vernix*), and various mosses and ferns. Abandoned upland fields usually contain Indian grass (*Andropogon* Spp.).

Throughout this region which does not have a high economic value for agricultural or forest crops, there is an excellent opportunity to produce a crop of wildlife. In its present unaltered state, adequate food is the factor that controls game species and other forms of wildlife.

Within the Coastal Plain Region the following areas have been under development as of June 30, 1940:

| Name of Tract                        | Location of Tract | Acreage   |
|--------------------------------------|-------------------|-----------|
| Glassboro Public Shooting Ground     | Gloucester County | 2,019.79  |
| Haleyville Public Shooting Ground    | Cumberland County | 1,441.93  |
| Tuckahoe Public Shooting Ground      | Cape May County   | 2,800.    |
| Port Republic Public Shooting Ground | Atlantic County   | 10,099.26 |
| Manahawkin Public Shooting Ground    | Ocean County      | 964.96    |
| Medford Public Shooting Ground       | Burlington County | 214.07    |



Each area was studied, mapped, and the proposed operations charted. The region is largely deficient in an annual food supply and particular stress was placed upon overcoming this deficiency. Each area was improved in accordance with the results of specific study. The following resume is a record of the work accomplished as of June 30, 1940:

#### Glassboro Public Shooting and Fishing Ground

This area consisted of 2,019.79 acres of woodland and swampland. In order to create an adequate distribution of food facilities, existing vegetation was removed from chosen locations, stumps pulled, soil plowed, limed, and in some instances fertilized. Edges were planted with food shrubs and vines with the cultivated portion of the food area being planted to seed bearing grasses and legumes. This development was a project carried on by CCC Camp S-72.

The following is the food area construction.

| Food Area Number | Acreage in Area | Acres of Lespedeza Sericea | Acres of Other Food Mixtures* | Date First Planted |
|------------------|-----------------|----------------------------|-------------------------------|--------------------|
| 1                | 0.8             | 0.8                        |                               | 1940               |
| 2                | 1.0             | 0.7                        | 0.3                           | 1936               |
| 3                | 1.4             | 1.0                        | 0.2                           | 1940               |
| 4                | 1.6             | 1.2                        | 0.2                           | 1940               |
| 5                | 1.6             | 1.2                        | 0.25                          | 1940               |
| 6                | 1.4             | 1.15                       | 0.25                          | 1939               |
| 7                | 1.7             | 1.4                        | 0.25                          | 1939               |
| 8                | 1.9             | 1.4                        | 0.5                           | 1940               |
| 9                | 2.3             | 1.9                        | 0.3                           | 1940               |
| 10               | 1.2             | 1.0                        | 0.2                           | 1940               |
| 11               | 1.4             | 1.0                        | 0.3                           | 1940               |
| 12               | 2.2             | 1.8                        | 0.3                           | 1940               |
| 13               | 1.5             | 1.2                        | 0.25                          | 1939               |
| 14               | 1.2             | 1.0                        | 0.2                           | 1940               |
| 15               | 4.3             | 2.0                        | 0.3                           | 1936               |
| 16               | 1.4             | 1.0                        | 0.3                           | 1940               |
| 17               | 9.5             | 2.3                        | 0.25                          | 1936               |
| 18               | 1.5             | 1.2                        | 0.25                          | 1940               |
| 19               | 1.9             | 1.3                        | 0.25                          | 1940               |
| 20               | 1.3             | 1.0                        | 0.30                          | 1940               |
| 21               | 1.6             | 1.2                        | 0.30                          | 1940               |
| 22               | 1.6             | 1.3                        | 0.25                          | 1939               |
| 23               | 2.2             | 1.8                        | 0.30                          | 1940               |
| 24               | 2.9             | 2.0                        | 0.25                          | 1940               |
| 25               | 1.4             | 1.1                        | 0.25                          | 1940               |
| 26               | 2.2             | 1.8                        | 0.25                          | 1940               |
| 27               | 4.0             | 1.6                        | 0.30                          | 1936               |
| 28               | 2.7             | 2.0                        | 0.25                          | 1936               |
| 29               | 2.3             | 1.5                        | 0.25                          | 1939               |
| 30               | 1.2             | 1.0                        | 0.20                          | 1938               |
| 31               | 1.8             | 1.50                       | 0.25                          | 1940               |
| 32               | 2.              | 1.8                        | 0.2                           | 1939               |
| 33               | 2.4             | 2.15                       | 0.25                          | 1939               |
| 34               | 1.5             | 1.25                       | 0.25                          | 1940               |
| 35               | 2.2             | 1.9                        | 0.30                          | 1939               |
| 36               | 1.7             | 1.4                        | 0.30                          | 1939               |
| 37               | 1.6             | 1.3                        | 0.30                          | 1939               |
| 38               | 1.9             | 1.65                       | 0.25                          | 1939               |

| Food Area<br>Number | Acreage<br>in Area | Acres of<br>Lespedeza<br>Sericea | Acres of<br>Other Food<br>Mixtures* | Date First<br>Planted |
|---------------------|--------------------|----------------------------------|-------------------------------------|-----------------------|
| 39                  | 1.7                | 1.40                             | 0.30                                | 1939                  |
| 40                  | 1.3                | 1.05                             | 0.25                                | 1940                  |
| 41                  | 2.                 | 1.75                             | 0.25                                | 1939                  |
| 42                  | 1.8                | 1.50                             | 0.25                                | 1939                  |
| 43                  | 2.6                | 1.3                              | 0.35                                | 1939                  |
| 44                  | 4.6                | 2.0                              | 2.5                                 | 1936                  |
| 45                  | 1.8                | 1.6                              | 0.20                                | 1939                  |
| 46                  | 1.7                | 1.4                              | 0.25                                | 1940                  |
| 47                  | 2.1                | 2.1                              |                                     | 1940                  |
| 48                  | 4.9                | 3.15                             | 0.30                                | 1937                  |
| 49                  | 2.2                | 1.9                              | 0.30                                | 1940                  |
| 50                  | 0.8                |                                  | 0.8                                 | 1940                  |
| 51                  | 2.5                | 2.25                             | 0.25                                | 1939                  |
| 52                  | 2.2                | 1.90                             | 0.25                                | 1940                  |
| 53                  | 3.0                | 2.30                             | 0.50                                | 1940                  |
| 54                  | 2.2                | 1.95                             | 0.25                                | 1940                  |
| 55                  | 2.4                | 2.1                              | 0.30                                | 1939                  |
| 56                  | 1.7                | 1.45                             | 0.25                                | 1939                  |
| 57                  | 1.9                | 1.65                             | 0.25                                | 1939                  |
| 58                  | 1.5                | 1.20                             | 0.30                                | 1940                  |
| 59                  | 1.7                | 1.45                             | 0.25                                | 1939                  |
| 60                  | 2.4                | 2.10                             | 0.30                                | 1939                  |
| 61                  | 2.6                | 2.30                             | 0.25                                | 1939                  |
| 62                  | 5.7                | 5.0                              | 0.60                                | 1936                  |
| 63                  | 9.8                | 4.50                             | 0.30                                | 1936                  |
| 64                  | 2.3                | 2.05                             | 0.25                                | 1940                  |
| 65                  | 3.6                | 1.20                             | 1.20                                | 1939                  |
| 66                  | 1.5                | 1.30                             | 0.20                                | 1939                  |
| 67                  | 1.8                |                                  | 0.25                                | 1940                  |
| 68                  | 2.3                | 2.00                             | 0.30                                | 1940                  |
| 69                  | 2.7                | 2.45                             | 0.25                                | 1940                  |
| 70                  | 1.9                | 1.65                             | 0.25                                | 1940                  |
| 71                  | 1.4                | 1.15                             | 0.25                                | 1940                  |
| Total               | 162.9              | 114.90                           | 22.60                               |                       |

\* Other food patch mixtures and grains consisted of those previously mentioned.

FIGURE II

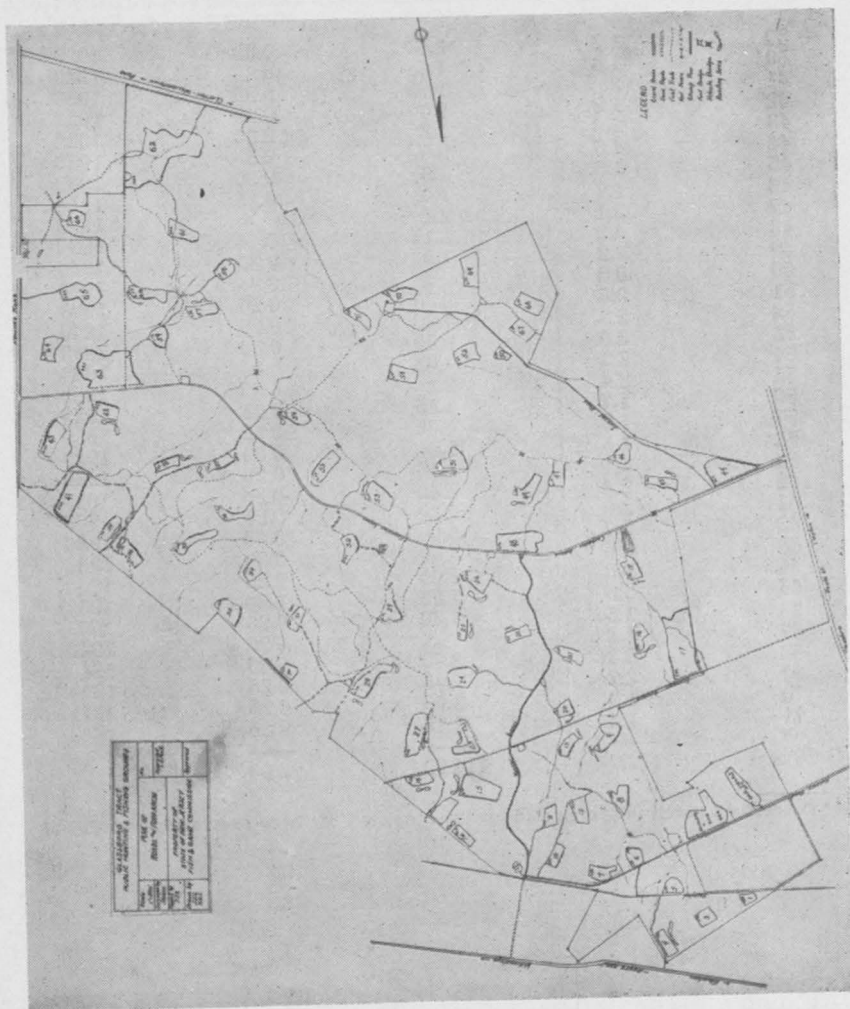


Figure showing food area distribution on the Glassboro Public Shooting Grounds, June 30, 1940

LEGEND

- |                |           |
|----------------|-----------|
| Gravel Roads   | =====     |
| Sand Roads     | -----     |
| Foot Trails    | .....     |
| Rail Fence     | x-x-x-x-  |
| Stump Row      | o-o-o-o-o |
| Foot Bridge    | ⋈         |
| Vehicle Bridge | ⋈         |
| Roosting Area  | ∞         |

The following Chart represents the annual accomplishment other than food area construction during the era 1936—1940 inclusive:

|                                 | 1936           | 1937           | 1938          | 1939           | 1940          | Total            |
|---------------------------------|----------------|----------------|---------------|----------------|---------------|------------------|
| Rail Fence Construction.....    | 3,913.8 ft.    | 2,169.0 ft.    | ....          | ....           | ....          | 6,082.8 ft.      |
| Firebreak Completed .....       | ....           | 2.4 mi.        | ....          | ....           | ....          | 2.4 mi.          |
| Roadside Fire Hazard Reduction  | 1.1 mi.        | 1.5 mi.        | ....          | ....           | ....          | 2.6 mi.          |
| Road Built .....                | 1.4 mi.        | 2.7 mi.        | .9 mi.        | ....           | 1.8 mi.       | 6.8 mi.          |
| Parking Areas Constructed....   | ....           | ....           | 5,035 sq. yd. | 5,035 sq. yd.  | 2,400 sq. yd. | 12,470 sq. yd.   |
| Foot Trails Constructed.....    | 0.4 mi.        | 5.5 mi.        | ....          | 4.0 mi.        | .7 mi.        | 10.6 mi.         |
| Fire Hazard Reduction.....      | 30.0 A.        | 43.9 A.        | 27.0 A.       | ....           | 147.0 A.      | 247.9 A          |
| Cleaning Channels .....         | 21,000 sq. yd. | 16,262 sq. yd. | 9,678 sq. yd. | 12,313 sq. yd. | 5,660 sq. yd. | 64,913.0 sq. yd. |
| Forest Stand Improvement....    | ....           | 61.0 A.        | ....          | ....           | 110.0 A.      | 171.0 A.         |
| Diversion Ditching .....        | ....           | ....           | ....          | 8,200 ft.      | 4,425.0 ft.   | 12,625.0 ft.     |
| Guard Rail Construction .....   | ....           | ....           | ....          | 66 rds.        | 27 rds.       | 93 rds.          |
| Stump Row Construction .....    | ....           | ....           | ....          | 156.0 rds.     | 333.3 rds.    | 489.3 rds.       |
| Stone Wall Construction .....   | ....           | ....           | ....          | 240 cu. ft.    | ....          | 240.0 cu. ft.    |
| Trailside Fire Hazard Reduction | ....           | ....           | ....          | ....           | 9.2 mi.       | 9.2 mi.          |
| Foot Bridge Construction .....  | ....           | ....           | ....          | ....           | 6             | 6                |
| Construction of Rides .....     | ....           | ....           | ....          | ....           | 57 A.         | 57.0 A.          |

The following Chart represents the shrubs, trees and vines planted on Glassboro Public Shooting Grounds in order that existing environment be improved:

|                                     | 1937  | 1938 | 1939  | 1940   | Total  |
|-------------------------------------|-------|------|-------|--------|--------|
| <i>Pinus strobus</i> .....          | 500   | ...  | 370   | ....   | 870    |
| <i>Maclura pomifera</i> .....       | 525   | ...  | ...   | 2,644  | 3,169  |
| <i>Prunus pennsylvanica</i> .....   | ...   | 5    | ...   | ....   | 5      |
| <i>Lonicera japonica</i> .....      | ...   | 158  | 800   | ....   | 958    |
| <i>Smilax</i> sp. ....              | ...   | 25   | ...   | ....   | 25     |
| <i>Rosa multiflora</i> .....        | ...   | ...  | 367   | 290    | 657    |
| <i>Juglans cinerea</i> .....        | ...   | ...  | 4     | ....   | 4      |
| <i>Rosa palustris</i> .....         | ...   | ...  | 100   | ....   | 100    |
| <i>Morus alba</i> .....             | ...   | ...  | 200   | 5,000  | 5,200  |
| <i>Rosa nitida</i> .....            | ...   | ...  | 210   | 1,200  | 1,410  |
| <i>Symphoricarpos vulgaris</i> ..   | ...   | ...  | 419   | 4,000  | 4,419  |
| <i>Rosa humilis</i> .....           | ...   | ...  | 350   | 276    | 626    |
| <i>Berberis thunbergi</i> .....     | ...   | ...  | 3,916 | ....   | 3,916  |
| <i>Prunus padus</i> .....           | ...   | ...  | 65    | 20     | 85     |
| <i>Prunus virginiana</i> .....      | ...   | ...  | 50    | 71     | 121    |
| <i>Amalanchier canadensis</i> ..    | ...   | ...  | 164   | ....   | 164    |
| <i>Celastrus scandens</i> .....     | ...   | ...  | 1,444 | 2,500  | 3,944  |
| <i>Diospyros virginiana</i> .....   | ...   | ...  | 134   | 1,425  | 1,559  |
| <i>Juglans nigra</i> .....          | ...   | ...  | 138   | ....   | 138    |
| <i>Viburnum opulus</i> .....        | ...   | ...  | 800   | 50     | 850    |
| <i>Vitis</i> sp. ....               | ...   | ...  | 10    | ....   | 10     |
| <i>Castanea mollissima</i> .....    | ...   | ...  | 220   | ....   | 220    |
| <i>Pueraria thunbergiana</i> .....  | ...   | ...  | ...   | 1,450  | 1,450  |
| <i>Caragana arborescens</i> .....   | ...   | ...  | ...   | 1,000  | 1,000  |
| <i>Rhamnus cathartica</i> .....     | ...   | ...  | ...   | 2,050  | 2,050  |
| <i>Ampelopsis quinquefolia</i> ..   | ...   | ...  | ...   | 500    | 500    |
| <i>Pinus taeda</i> .....            | ...   | ...  | ...   | 10,000 | 10,000 |
| <i>Crataegus crus-galli</i> .....   | ...   | ...  | ...   | 225    | 225    |
| <i>Crataegus cordata</i> .....      | ...   | ...  | ...   | 10     | 10     |
| <i>Pinus echinata</i> .....         | ...   | ...  | ...   | 25,000 | 25,000 |
| <i>Euonymus americana</i> .....     | ...   | ...  | ...   | 825    | 825    |
| <i>Euonymus bungeanus</i> .....     | ...   | ...  | ...   | 925    | 925    |
| <i>Lespedeza bicolor alba</i> ..... | ...   | ...  | ...   | 4,500  | 4,500  |
| <i>Malus coronaria</i> .....        | ...   | ...  | ...   | 2,970  | 2,970  |
| <i>Prunus avium</i> .....           | ...   | ...  | ...   | 326    | 326    |
|                                     | 1,025 | 188  | 9,761 | 67,257 | 78,231 |

Conifers were mainly used to revegetate burned over areas. Shrubs, vines, and deciduous trees were used to plant the edges of the 71 food areas constructed on the area.

Investigations and studies from which proposed development plans of the various areas were derived, indicated the need of supplementing the vegetation present. Particularly was this applicable to the shrub zone or that strip of cover that exists between the open field and the bordering trees. In newly cleared areas it was advisable to create a shrub zone rather than wait the several years necessary for production of this zone by natural plant succession. In order that an available supply of various shrubs would be present, a shrub nursery was constructed in 1936.

Distribution from this nursery has not been entirely confined to State-owned lands or Federal Aid Projects. A supply of various shrubs has been furnished to Sportsmen's Clubs, Boy Scout Organizations, and similar organizations interested in the conservation and betterment of wildlife habitats.



# NURSERY



Production and distribution has been as follows:

|                                      | 1937   | 1938   | 1939   | 1940   | Total   |
|--------------------------------------|--------|--------|--------|--------|---------|
| <i>Berberis thunbergi</i> .....      | 27,000 | 8,250  | 14,536 | 24,200 | 73,986  |
| <i>Celastrus scandens</i> .....      | 7,000  | 1,679  | 15,374 | 9,385  | 33,438  |
| <i>Maclura pomifera</i> .....        | 15,000 | 3,706  | 7,520  | 4,519  | 30,745  |
| <i>Symphoricarpos vulgaris</i> . . . |        | 181    | 764    | 6,055  | 7,000   |
| <i>Rosa nitida</i> .....             |        | 305    | 805    | 2,780  | 3,890   |
| <i>Rosa palustris</i> .....          |        | 150    | 300    | 7,945  | 8,395   |
| <i>Rosa humilus</i> .....            |        | 325    | 750    | 436    | 1,511   |
| <i>Prunus pennsylvanica</i> . . .    |        | 44     | ...    | ...    | 44      |
| <i>Lonicera japonica</i> .....       |        | 158    | 900    | ...    | 1,058   |
| <i>Juglans cinerea</i> .....         |        | ...    | 14     | ...    | 14      |
| <i>Rosa multiflora</i> .....         |        | ...    | 607    | 1,037  | 1,644   |
| <i>Prunus padus</i> .....            |        | ...    | 425    | 120    | 545     |
| <i>Morus alba</i> .....              |        | ...    | 1,225  | 7,925  | 9,150   |
| <i>Prunus virginiana</i> .....       |        | ...    | 250    | 121    | 371     |
| <i>Rosa</i> Spp. ....                |        | ...    | 130    | ...    | 130     |
| <i>Amalanchier canadensis</i> ..     |        | ...    | 264    | ...    | 264     |
| <i>Castanea crenata</i> .....        |        | ...    | 155    | ...    | 155     |
| <i>Diospyrus virginiana</i> . . .    |        | ...    | 214    | 1,625  | 1,839   |
| <i>Juglans nigra</i> .....           |        | ...    | 231    | ...    | 231     |
| <i>Viburnum opulus</i> .....         |        | ...    | 10     | 180    | 190     |
| <i>Vitis</i> Spp. ....               |        | ...    | 220    | ...    | 220     |
| <i>Castanea mollissima</i> .....     |        | ...    | 70     | ...    | 70      |
| <i>Pueraria thunbergiana</i> ..      |        | ...    | ...    | 2,210  | 2,210   |
| <i>Caragana arborescens</i> . . .    |        | ...    | ...    | 1,951  | 1,951   |
| <i>Rhamnus cathartica</i> .....      |        | ...    | ...    | 2,700  | 2,700   |
| <i>Ampelopsis quinquefolia</i> ..    |        | ...    | ...    | 925    | 925     |
| <i>Malus communis</i> .....          |        | ...    | ...    | 288    | 288     |
| <i>Euonymus bungeanus</i> .....      |        | ...    | ...    | 1,560  | 1,560   |
| <i>Euonymus americana</i> .....      |        | ...    | ...    | 1,480  | 1,480   |
| <i>Lespedeza bicolor alba</i> . . .  |        | ...    | ...    | 7,175  | 7,175   |
| <i>Aronia arbutifolia</i> .....      |        | ...    | ...    | 63     | 63      |
| <i>Malus coronaria</i> .....         |        | ...    | ...    | 4,615  | 4,615   |
| <i>Prunus avium</i> .....            |        | ...    | ...    | 691    | 691     |
| <i>Crataegus cordata</i> .....       |        | ...    | ...    | 10     | 10      |
| <i>Crataegus crus-galli</i> .....    |        | ...    | ...    | 270    | 270     |
|                                      | 49,000 | 14,798 | 44,764 | 90,266 | 198,828 |

### Haleyville Public Shooting Ground

This area, consisting of 1,441.93 acres, is located in Cumberland County, south of Millville and west of the Maurice River, adjacent to the town from which it takes its name.

At the time of acquisition, the area consisted of approximately 95% woodland, consisting mainly of oak and pine. In order that food facilities be improved and properly distributed, a technique similar to that shown for the Glassboro area was employed with the difference that greater stress was given to developments designed to furnish protection against fire.

The following chart is a resume of the annual completion of projects designed to increase and maintain wildlife in the Haleyville Area.

|                                              | 1936    | 1937    | 1938    | 1939     | 1940    | Total to Date |
|----------------------------------------------|---------|---------|---------|----------|---------|---------------|
| 50 ft. Firebreak<br>constructed ...          | 1.2 mi. | 3.25 mi | 1.9 mi. |          |         | 6.35 Miles    |
| Roadside fire<br>hazard reduc-<br>tion ..... | .5 mi.  |         |         |          |         | .5 Miles      |
| Food areas<br>constructed ...                | 16 A.   |         | 55.9 A. | 6.1 A.   | 2 A.    | 80 Acres      |
| Trees pollarded.                             | 7 A.    | 2.5 A.  | 5 A.    |          |         | 14.5 Acres    |
| Fire hazard<br>reduction .....               | 5 A.    |         | 27 A.   |          |         | 32 Acres      |
| Soil preparation                             |         | 19 A.   | 26 A.   | 39.75 A. | 58.6 A. | 143.35 Acres  |
| Liberation<br>cutting .....                  |         |         | 8 A.    |          |         | 8 Acres       |
| Stump row<br>construction ..                 |         |         |         | 10 rds.  |         | 10 Rods       |
| Firebreak<br>maintained ...                  |         |         |         |          | 4 mi.   | 4 Miles       |

# CLEARED FIRE BREAK



These cleared strips are primarily installed for fire protection. In order that they can better serve as a benefit to wildlife they are planted to *Lespedeza sericea*. A two year growth of this plant is evident in the foreground of the picture.

Plantings of trees, shrubs, and vines necessary for habitat improvement have been made as follows:

|                                  | 1935   | 1936   | 1937 | 1938  | 1939  | 1940  | Total  |
|----------------------------------|--------|--------|------|-------|-------|-------|--------|
| <i>Maclura pomifera</i> ....     | 790    | ...    | ...  | 1,375 | ...   | ...   | 2,165  |
| <i>Rubus</i> Spp. ....           | 3,500  | ...    | ...  | ...   | ...   | ...   | 3,500  |
| <i>Viburnum opulus</i> ....      | 2,000  | ...    | ...  | ...   | ...   | 20    | 2,020  |
| <i>Crataegus</i> Spp. ....       | 2,000  | ...    | ...  | ...   | ...   | ...   | 2,000  |
| <i>Euonymus bungeanus</i> .      | 1,000  | ...    | ...  | ...   | ...   | 100   | 1,100  |
| <i>Berberis thunbergiana</i> .   | 2,000  | ...    | ...  | 2,000 | 500   | 1,000 | 5,500  |
| <i>Vitis</i> Spp. ....           | 100    | ...    | ...  | ...   | ...   | ...   | 100    |
| <i>Picea abies</i> ....          | ...    | 5,000  | ...  | ...   | ...   | ...   | 5,000  |
| <i>Pinus resinosa</i> ....       | ...    | 5,000  | ...  | ...   | ...   | ...   | 5,000  |
| <i>Pinus strobus</i> ....        | ...    | 250    | ...  | ...   | ...   | ...   | 250    |
| <i>Lonicera japonica</i> ....    | ...    | 2,000  | ...  | ...   | ...   | ...   | 2,000  |
| <i>Symphoricarpos vulgaris</i>   | ...    | ...    | ...  | 126   | 120   | 500   | 746    |
| <i>Rosa nitida</i> ....          | ...    | ...    | ...  | 10    | 80    | ...   | 90     |
| <i>Rosa palustris</i> ....       | ...    | ...    | ...  | 10    | 50    | 400   | 460    |
| <i>Rosa humilis</i> ....         | ...    | ...    | ...  | 10    | 50    | ...   | 60     |
| <i>Prunus pennsylvanica</i> ..   | ...    | ...    | ...  | 14    | ...   | ...   | 14     |
| <i>Celastrus scandens</i> ....   | ...    | ...    | ...  | 50    | 230   | 1,000 | 1,280  |
| <i>Rosa multiflora</i> ....      | ...    | ...    | ...  | ...   | 25    | ...   | 25     |
| <i>Morus alba</i> ....           | ...    | ...    | ...  | ...   | 125   | 500   | 625    |
| <i>Prunus padus</i> ....         | ...    | ...    | ...  | ...   | 25    | ...   | 25     |
| <i>Prunus virginiana</i> ....    | ...    | ...    | ...  | ...   | 50    | ...   | 50     |
| <i>Diospyrus virginiana</i> .    | ...    | ...    | ...  | ...   | 30    | ...   | 30     |
| <i>Juglans nigra</i> ....        | ...    | ...    | ...  | ...   | 18    | ...   | 18     |
| <i>Casteanea mollissima</i> ..   | ...    | ...    | ...  | ...   | 45    | ...   | 45     |
| <i>Pueraria thunbergiana</i> .   | ...    | ...    | ...  | ...   | ...   | 100   | 100    |
| <i>Caragana arborescens</i> ..   | ...    | ...    | ...  | ...   | ...   | 200   | 200    |
| <i>Rhamnus cathartica</i> ...    | ...    | ...    | ...  | ...   | ...   | 40    | 40     |
| <i>Ampelopsis quinquefolia</i>   | ...    | ...    | ...  | ...   | ...   | 50    | 50     |
| <i>Euonymus americana</i> ..     | ...    | ...    | ...  | ...   | ...   | 100   | 100    |
| <i>Lespedeza bicolor alba</i> .. | ...    | ...    | ...  | ...   | ...   | 450   | 450    |
|                                  | 11,390 | 12,250 | 0    | 3,595 | 1,348 | 4,460 | 33,043 |

### Tuckahoe Public Shooting and Fishing Ground

This area is located in northern Cape May County. It borders the Tuckahoe River and is situated between the towns of Tuckahoe and Petersburg and originally contained 2,800 acres. Recently this area has been extended to include the area embraced by the Egg Harbor River from Gibson Landing to the junction of the Egg Harbor and Tuckahoe Rivers, and creates a unit of Public Shooting Grounds totaling 12,400 acres.

Facilities for the development of this area have been made available by the Federal Fish and Wildlife Service and Civilian Conservation Corps. Consideration has been given to the improvement of marsh and aquatic environment as well as upland developments.

Developments to date are as follows:

|                                      | 1935  | 1936  | 1937           | 1938   | 1939      | 1940      | Total          |
|--------------------------------------|-------|-------|----------------|--------|-----------|-----------|----------------|
| Fresh water impoundments ..          | 10 A. | ....  | ....           | ....   | ....      | 50 A.     | 60 A.          |
| Food areas cut .....                 | ....  | 14 A. | 12 A.          | ....   | 12 A.     | ....      | 38 A.          |
| Food areas stumped .....             | ....  | 14 A. | 4 A.           | 6 A.   | 14 A.     | ....      | 38 A.          |
| Cleaning channels .....              | ....  | ....  | 3,700 sq. yds. | ....   | ....      | ....      | 3,700 sq. yds. |
| Road maintained .....                | ....  | ....  | 4 Mi.          | 4 Mi.  | 8 Mi.     | 3 Mi.     | 19 Mi.         |
| Roadside fire hazard reduction ..... | ....  | ....  | ....           | 21 Mi. | ....      | ....      | 21 Mi.         |
| Soil preparation .....               | ....  | ....  | 8 A.           | 3.5 A. | 12.5 A.   | ....      | 24 A.          |
| Foot trails maintained .....         | ....  | ....  | 5 Mi.          | ....   | ....      | ....      | 5 Mi.          |
| Ponds planted .....                  | ....  | ....  | 1              | ....   | ....      | ....      | 1              |
| Spillways constructed .....          | ....  | ....  | 1              | ....   | ....      | 3         | 4              |
| Liberation cuttings .....            | ....  | ....  | ....           | 2 A.   | ....      | ....      | 2 A.           |
| Diversion ditch .....                | ....  | ....  | ....           | ....   | 3,000 ft. | ....      | 3,000 ft.      |
| Dike construction .....              | ....  | ....  | ....           | ....   | 4,000 ft. | 4,000 ft. | 8,000 ft.      |
| Stump rows constructed .....         | ....  | ....  | ....           | ....   | 100 Rds.  | ....      | 100 Rds.       |
| Buildings repaired .....             | ....  | ....  | ....           | ....   | 1         | ....      | 1              |
| Forest stand improvement ...         | ....  | ....  | ....           | ....   | 40 A.     | ....      | 40 A.          |
| Clearing pond sites.....             | ....  | ....  | ....           | ....   | 15 A.     | 2 A.      | 17 A.          |
| Fire hazard reduction .....          | ....  | ....  | ....           | ....   | ....      | 65 A.     | 65 A.          |
| Road construction .....              | ....  | ....  | ....           | ....   | ....      | .5 Mi.    | .5 Mi.         |



# TUCKAHOE LAKE



In order that improved environment will contribute to the future welfare of wildlife populations, the following trees, shrubs, and vines have been planted:

| Species                              | 1936   | 1937 | 1938 | 1939   | 1940  | Total  |
|--------------------------------------|--------|------|------|--------|-------|--------|
| <i>Picea abies</i> .....             | 5,000  | ...  | ...  | ...    | ...   | 5,000  |
| <i>Pinus resinosa</i> .....          | 5,000  | ...  | ...  | ...    | ...   | 5,000  |
| <i>Pinus strobus</i> .....           | 250    | ...  | ...  | ...    | ...   | 250    |
| <i>Lonicera japonica</i> .....       | 2,000  | ...  | ...  | ...    | ...   | 2,000  |
| <i>Rubus</i> spp. ....               | ...    | 400  | ...  | ...    | ...   | 400    |
| <i>Salix</i> spp. ....               | ...    | 25   | ...  | ...    | ...   | 25     |
| <i>Morus nigra</i> .....             | ...    | 25   | ...  | ...    | ...   | 25     |
| <i>Maclura pomifera</i> .....        | ...    | ...  | 200  | ...    | ...   | 200    |
| <i>Symphoricarpos vulgaris</i> ..... | ...    | ...  | 15   | 100    | 200   | 315    |
| <i>Rosa nitida</i> .....             | ...    | ...  | 100  | 100    | 200   | 400    |
| <i>Rosa palustris</i> .....          | ...    | ...  | 100  | 50     | 500   | 650    |
| <i>Rosa humilus</i> .....            | ...    | ...  | 100  | 100    | ...   | 200    |
| <i>Celastrus scandens</i> .....      | ...    | ...  | 25   | 500    | 500   | 1,025  |
| <i>Rosa multiflora</i> .....         | ...    | ...  | ...  | 50     | 50    | 100    |
| <i>Morus alba</i> .....              | ...    | ...  | ...  | 125    | 500   | 625    |
| <i>Berberis thunbergi</i> .....      | ...    | ...  | ...  | 500    | 1,000 | 1,500  |
| <i>Prunus padus</i> .....            | ...    | ...  | ...  | 25     | ...   | 25     |
| <i>Prunus virginiana</i> .....       | ...    | ...  | ...  | 50     | ...   | 50     |
| <i>Diospyrus virginiana</i> .....    | ...    | ...  | ...  | 50     | 100   | 150    |
| <i>Juglans nigra</i> .....           | ...    | ...  | ...  | 50     | ...   | 50     |
| <i>Viburnum opulus</i> .....         | ...    | ...  | ...  | 75     | 20    | 95     |
| <i>Castanea mollissima</i> .....     | ...    | ...  | ...  | 25     | ...   | 25     |
| <i>Pinus taeda</i> .....             | ...    | ...  | ...  | 5,000  | ...   | 5,000  |
| <i>Pinus rigida</i> .....            | ...    | ...  | ...  | 1,000  | ...   | 1,000  |
| <i>Pinus echinata</i> .....          | ...    | ...  | ...  | 2,500  | ...   | 2,500  |
| <i>Pueraria thunbergiana</i> .....   | ...    | ...  | ...  | ...    | 100   | 100    |
| <i>Caragana arborescens</i> .....    | ...    | ...  | ...  | ...    | 100   | 100    |
| <i>Rhamnus cathartica</i> .....      | ...    | ...  | ...  | ...    | 50    | 50     |
| <i>Ampelopsis quinquefolia</i> ..... | ...    | ...  | ...  | ...    | 50    | 50     |
| <i>Euonymus americana</i> .....      | ...    | ...  | ...  | ...    | 50    | 50     |
| <i>Euonymus bungeanus</i> .....      | ...    | ...  | ...  | ...    | 50    | 50     |
| <i>Lespedeza bicolor</i> .....       | ...    | ...  | ...  | ...    | 200   | 200    |
| <i>Malus coronaria</i> .....         | ...    | ...  | ...  | ...    | 250   | 250    |
| <i>Prunus avium</i> .....            | ...    | ...  | ...  | ...    | 50    | 50     |
| Total.....                           | 12,250 | 450  | 540  | 10,300 | 3,970 | 27,510 |

## FRESH WATER IMPOUNDMENT



Wildfowl respond to a pleasing degree to this type of impoundment. Depths vary from a few inches to ten feet. The site of this impoundment is on the salt marsh adjacent to the upland.

Developments such as pictured above are receiving stress on the Tuckahoe area. These structures are constructed on the salt marsh and consist of fresh water impounded by a dike. Water depths vary from that of a few inches to a maximum of eleven feet. Waterfowl respond to these areas immediately and muskrats and certain fresh water fish find in them a desirable home. The ultimate development of Tuckahoe Public Shooting and Fishing Grounds will contain 1,000 acres of this type of habitat.

### Port Republic Public Shooting and Fishing Ground

This area of 722 acres is located in the northeastern portion of Atlantic County. It borders the Mullica River at a point slightly west of Chestnut Neck and extends in a southerly direction to the proximity of Port Republic. Through the cooperation of CCC Camp FWS of the Fish and Wildlife Service, environmental improvements are proceeding swiftly. The following work has been accomplished:

| Operation                            | 1940      |
|--------------------------------------|-----------|
| Food Areas Cleared .....             | 11 Acres  |
| Food Areas Stumped .....             | 13 Acres  |
| Soil Preparation .....               | 11 Acres  |
| 50 ft. Firebreak Cleared .....       | 2.1 Miles |
| 50 ft. Firebreak Stumped .....       | 2.1 Miles |
| 50 ft. Firebreak Plowed .....        | 1.8 Miles |
| Foot Trail Construction .....        | 1,450 Ft. |
| Road Construction .....              | .25 Mile  |
| Fire Hazard Reduction .....          | 18 Acres  |
| Forest Stand Improvement .....       | 18 Acres  |
| Buildings Razed .....                | 3         |
| Construction of Wildlife Havens..... | 24        |

In addition, the following trees, shrubs and vines were planted for environmental improvement:

| Species                              | Number Planted 1940 |
|--------------------------------------|---------------------|
| <i>Pueraria thunbergiana</i> .....   | 250                 |
| <i>Celastrus scandens</i> .....      | 500                 |
| <i>Rosa palustris</i> .....          | 500                 |
| <i>Berberis thunbergi</i> .....      | 1,000               |
| <i>Caragana arborescens</i> .....    | 75                  |
| <i>Morus alba</i> .....              | 200                 |
| <i>Rhamnus cathartica</i> .....      | 100                 |
| <i>Ampelopsis quinquefolia</i> ..... | 50                  |
| <i>Viburnum opulus</i> .....         | 20                  |
| <i>Euonymus americana</i> .....      | 100                 |
| <i>Euonymus bungeanus</i> .....      | 100                 |
| <i>Lespedeza bicolor alba</i> .....  | 300                 |
| <i>Symphoricarpus vulgaris</i> ..... | 500                 |
| Total.....                           | 3,695               |

#### Manahawkin Public Shooting and Fishing Ground

This area having a total acreage of 964.96 acres is located in Ocean County east of Manahawkin and north of State Highway 40, as it proceeds from Manahawkin to Beach Haven. The area is composed of upland and salt marsh. In addition to the regular facilities of the Division of Game Management, major assistance and development was received from the United States Government through a large and constructive W.P.A. project.

#### CONSTRUCTED SALT POND



Our salt marshes are badly in need of more water surface. After such a pond as pictured has been installed for a few years it is utilized by waterfowl.

Developments to date are as follows:

|                                       | 1936    | 1937   | 1938  | 1939      | 1940           | Total          |
|---------------------------------------|---------|--------|-------|-----------|----------------|----------------|
| Road constructed .....                | .75 Mi. | ...    | ...   | ...       | ....           | .75 Mi.        |
| Building razed .....                  | 1       | ...    | ...   | ...       | ....           | 1              |
| Food areas cut .....                  | ...     | 12 A.  | ...   | 27 A.     | 16.9 A.        | 55.9 A.        |
| Food areas stumped .....              | ...     | 4.8 A. | ...   | 27 A.     | 23.6 A.        | 55.4 A.        |
| Bridges constructed .....             | ...     | 2      | ...   | 1         | 2              | 5              |
| Salt ponds constructed .....          | ...     | 8      | ...   | ...       | 10             | 18             |
| Soil preparation .....                | ...     | 3 A.   | 11 A. | 34.5 A.   | 49.5 A.        | 98 A.          |
| Salt ponds planted .....              | ...     | 8      | ...   | ...       | ....           | 8              |
| Diversion ditch .....                 | ...     | ...    | ...   | 4,290 ft. | 6,100 ft.      | 10,390 ft.     |
| 50 ft. firebreak cleared .....        | ...     | ...    | ...   | 8,533 ft. | ....           | 8,533 ft.      |
| Dike construction .....               | ...     | ...    | ...   | 1,705 ft. | 3,140 ft.      | 4,845 ft.      |
| Forest stand improvement .....        | ...     | ...    | ...   | 60 A.     | ....           | 60 A.          |
| Firebreak plowed .....                | ...     | ...    | ...   | ...       | 1,305 ft.      | 1,305 ft.      |
| Guard rail construction .....         | ...     | ...    | ...   | ...       | 18 rods        | 18 rods        |
| Trailside fire hazard reduction ..... | ...     | ...    | ...   | ...       | 330 ft.        | 330 ft.        |
| Fire hazard reduction .....           | ...     | ...    | ...   | ...       | 72 A.          | 72 A.          |
| Clearing channels .....               | ...     | ...    | ...   | ...       | 3,000 sq. yds. | 3,000 sq. yds. |
| Check dams constructed .....          | ...     | ...    | ...   | ...       | 1              | 1              |
| Fresh water pond constructed .....    | ...     | ...    | ...   | ...       | 25 A.          | 25 A.          |

In order that in future years an extension of environment will accrue and present environment will be improved, the following trees, shrubs and vines were planted:

| Species                              | No. Planted in 1940 |
|--------------------------------------|---------------------|
| <i>Pueraria thunbergiana</i> .....   | 50                  |
| <i>Celastrus scandens</i> .....      | 850                 |
| <i>Rosa palustris</i> .....          | 575                 |
| <i>Berberis thunbergi</i> .....      | 1,050               |
| <i>Caragana arborescens</i> .....    | 200                 |
| <i>Morus alba</i> .....              | 750                 |
| <i>Maclura Pomifera</i> .....        | 1,175               |
| <i>Rhamnus cathartica</i> .....      | 250                 |
| <i>Ampelopsis quinquefolia</i> ..... | 200                 |
| <i>Viburnum opulus</i> .....         | 20                  |
| <i>Euonymus americana</i> .....      | 100                 |
| <i>Euonymus bungeanus</i> .....      | 100                 |
| <i>Symphoricarpos vulgaris</i> ..... | 255                 |
| <i>Lespedeza bicolor alba</i> .....  | 300                 |
| <i>Quercus borealis</i> .....        | 850                 |
| <i>Aronia arbutifolia</i> .....      | 25                  |
| <i>Malus coronaria</i> .....         | 300                 |
| <i>Prunus avium</i> .....            | 100                 |
| <i>Rosa multiflora</i> .....         | 300                 |
| <i>Rosa nitida</i> .....             | 425                 |
| <i>Prunus padus</i> .....            | 100                 |
| <i>Pinus taeda</i> .....             | 100                 |
| Total.....                           | 8,075               |

#### UPLAND FOOD AREA ON MANAHAWKIN



Food areas in the coastal plain region are constructed by removing by mechanical means all existing vegetation. The area is then plowed, soil prepared and planted to grasses and legumes. Note the *Lespedeza sericea* in the foreground.



## Medford Public Shooting and Fishing Ground

This area of 214.07 acres is located in Burlington County a short distance northwest of Medford. The following work has been accomplished on the area:

| Project                       | 1937      | 1938           | 1939 | 1940  | Total          |
|-------------------------------|-----------|----------------|------|-------|----------------|
| Buildings razed .....         | 1         | ....           | ...  | ....  | 1              |
| Bridle path cut .....         | 660 ft.   | ....           | ...  | ....  | 660 ft.        |
| Soil preparation .....        | 3 A.      | 4 A.           | 7 A. | 8 A.  | 22 Acres       |
| Fence removal .....           | 2,850 ft. | ....           | ...  | ....  | 2,850 ft.      |
| Brush removed .....           | ....      | 2 A.           | ...  | ....  | 2 Acres        |
| Clearing channels .....       | ....      | 5,000 sq. yds. | ...  | ....  | 5,000 sq. yds. |
| Hand ditch construction ..... | ....      | 4,050 ft.      | ...  | ....  | 4,050 ft.      |
| Power ditch construction..... | ....      | 1,800 ft.      | ...  | ....  | 1,800 ft.      |
| Forest stand improvement....  | ....      | ....           | ...  | 10 A. | 10 Acres       |

The following plantings of trees, shrubs and vines have been made:

| Species                              | 1940  |
|--------------------------------------|-------|
| <i>Pueraria thunbergiana</i> .....   | 50    |
| <i>Celastrus scandens</i> .....      | 510   |
| <i>Rosa palustris</i> .....          | 200   |
| <i>Berberis thunbergi</i> .....      | 1,000 |
| <i>Caragana arborescens</i> .....    | 75    |
| <i>Morus alba</i> .....              | 250   |
| <i>Maclura pomifera</i> .....        | 250   |
| <i>Rhamnus cathartica</i> .....      | 50    |
| <i>Viburnum opulus</i> .....         | 25    |
| <i>Euonymus americana</i> .....      | 100   |
| <i>Euonymus bungeanus</i> .....      | 100   |
| <i>Symphoricarpos vulgaris</i> ..... | 200   |
| <i>Lespedeza bicolor alba</i> .....  | 200   |
| Total.....                           | 3,010 |

## DEVELOPMENT IN THE PIEDMONT PLAIN

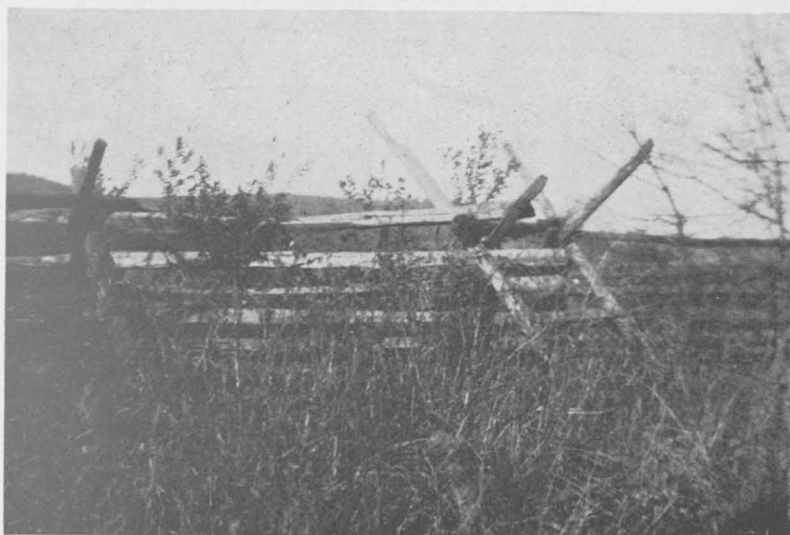
### Clinton Public Shooting and Fishing Ground

This area of 893 acres reclining in the hills of Hunterdon County, is located northwest of Clinton on the Union-Vansyckles Corner Road. It represents an area of severe hunting pressure and the improvement of food and cover facilities has received much stress.

Developments completed to date are as follows:

|                                         | 1935      | 1936      | 1937      | 1938  | 1939         | 1940          | Total          |
|-----------------------------------------|-----------|-----------|-----------|-------|--------------|---------------|----------------|
| Rail fence construction .....           | 6,965 ft. | 1,459 ft. | ....      | ...   | 2,189 ft.    | ....          | 10,613 ft.     |
| Fire break cut .....                    | ....      | .5 Mi.    | ....      | ...   | ....         | ....          | .5 Mi.         |
| Pollarding hedgerows .....              | ....      | 5,200 ft. | 2,000 ft. | ...   | 1,600 ft.    | ....          | 8,800 ft.      |
| Trail construction .....                | ....      | .3 Mi.    | ....      | ...   | 2.5 Mi.      | ....          | 2.8 Mi.        |
| Dismantling undesirable buildings. .... | ....      | 3         | 4         | ...   | ....         | 1             | 8              |
| Liberation cuttings .....               | ....      | 3 A.      | 3 A.      | ...   | 13.5 A.      | ....          | 19.5 A.        |
| Forest stand improvement .....          | ....      | 10 A.     | ....      | ...   | 50 A.        | ....          | 60 A.          |
| Buildings constructed .....             | ....      | ....      | 1         | ...   | ....         | 2             | 3              |
| Buildings renovated .....               | ....      | ....      | 1         | ...   | 2            | ....          | 3              |
| Bridges constructed .....               | ....      | ....      | 2         | 2     | 2            | 2             | 8              |
| Brush removal .....                     | ....      | ....      | ....      | 2 A.  | ....         | ....          | 2 A.           |
| Soil preparation .....                  | ....      | 10 A.     | 20 A.     | 28 A. | 32.5 A.      | 51 A.         | 141.5 A.       |
| Stone wall construction .....           | ....      | ....      | ....      | ...   | 1,000 cu.ft. | ....          | 1,000 cu. ft.  |
| Parking area .....                      | ....      | ....      | ....      | ...   | ....         | 3,425 sq.yds. | 3,425 sq. yds. |
| Boulder dams installed .....            | ....      | ....      | ....      | ...   | ....         | 28            | 28             |

## RAIL FENCE WITH COVER PLANTING



The following plantings have been made on this picturesque area in order that future years will bring an extension of wildlife environment.

| Species Planted                      | 1935   | 1936   | 1937  | 1938  | 1939   | 1940  | Total   |
|--------------------------------------|--------|--------|-------|-------|--------|-------|---------|
| <i>Picea Abies</i> .....             | 55,000 | 8,200  | ....  | 800   | 17,000 | 2,100 | 83,100  |
| <i>Pinus resinosa</i> .....          | 10,000 | 2,500  | ....  | 500   | 5,300  | 1,400 | 19,700  |
| <i>Maclura pomifera</i> .....        | 1,790  | ....   | 525   | ....  | 3,200  | 150   | 5,665   |
| <i>Rubus</i> spp. ....               | 5,900  | ....   | ....  | ....  | ....   | ....  | 5,900   |
| <i>Salix</i> spp. ....               | 1,800  | 400    | ....  | ....  | ....   | ....  | 2,200   |
| <i>Viburnum opulus</i> .....         | 4,000  | ....   | ....  | ....  | ....   | 20    | 4,020   |
| <i>Crataegus</i> spp. ....           | 3,000  | ....   | ....  | ....  | ....   | ....  | 3,000   |
| <i>Euonymus bungeanus</i> .....      | 2,000  | ....   | ....  | ....  | ....   | 50    | 2,050   |
| <i>Berberis thunbergi</i> .....      | 5,000  | ....   | ....  | 3,500 | 4,780  | 625   | 13,905  |
| <i>Juglans nigra</i> .....           | 97     | ....   | ....  | ....  | ....   | ....  | 97      |
| <i>Vitis</i> spp. ....               | 400    | ....   | ....  | ....  | ....   | ....  | 400     |
| <i>Lonicera japonica</i> .....       | 1,500  | 3,000  | ....  | ....  | ....   | ....  | 4,500   |
| <i>Tsuga canadensis</i> .....        | ....   | 1,750  | ....  | ....  | ....   | ....  | 1,750   |
| <i>Robinia pseudoacacia</i> .....    | ....   | 3,250  | ....  | ....  | ....   | ....  | 3,250   |
| <i>Fagus americana</i> .....         | ....   | 800    | ....  | ....  | ....   | ....  | 800     |
| <i>Quercus borealis</i> .....        | ....   | 1,275  | ....  | ....  | ....   | ....  | 1,275   |
| <i>Pinus strobus</i> .....           | ....   | ....   | 500   | 700   | 100    | ....  | 1,300   |
| <i>Symphoricarpos vulgaris</i> ..... | ....   | ....   | ....  | 10    | ....   | 100   | 110     |
| <i>Rosa nitida</i> .....             | ....   | ....   | ....  | 75    | 200    | 25    | 300     |
| <i>Rosa palustris</i> .....          | ....   | ....   | ....  | 15    | 100    | 175   | 290     |
| <i>Rosa humilis</i> .....            | ....   | ....   | ....  | 100   | 100    | ....  | 200     |
| <i>Prunus pennsylvanica</i> .....    | ....   | ....   | ....  | 5     | ....   | ....  | 5       |
| <i>Celastrus scandens</i> .....      | ....   | ....   | ....  | 1,340 | 8,500  | 300   | 10,140  |
| <i>Juglans cinerea</i> .....         | ....   | ....   | ....  | ....  | 10     | ....  | 10      |
| <i>Rosa multiflora</i> .....         | ....   | ....   | ....  | ....  | 50     | 25    | 75      |
| <i>Morus alba</i> .....              | ....   | ....   | ....  | ....  | 425    | 200   | 625     |
| <i>Prunus padus</i> .....            | ....   | ....   | ....  | ....  | 155    | ....  | 155     |
| <i>Prunus virginiana</i> .....       | ....   | ....   | ....  | ....  | 50     | ....  | 50      |
| <i>Amelanchier canadensis</i> .....  | ....   | ....   | ....  | ....  | 100    | ....  | 100     |
| <i>Rosa</i> spp. ....                | ....   | ....   | ....  | ....  | 130    | ....  | 130     |
| <i>Castanea crenata</i> .....        | ....   | ....   | ....  | ....  | 40     | ....  | 40      |
| <i>Castanea mollissima</i> .....     | ....   | ....   | ....  | ....  | 40     | ....  | 40      |
| <i>Juniperus pfitzeriana</i> .....   | ....   | ....   | ....  | ....  | 21     | ....  | 21      |
| <i>Pueraria thunbergiana</i> .....   | ....   | ....   | ....  | ....  | ....   | 75    | 75      |
| <i>Caragana arborescens</i> .....    | ....   | ....   | ....  | ....  | ....   | 50    | 50      |
| <i>Rhamnus cathartica</i> .....      | ....   | ....   | ....  | ....  | ....   | 50    | 50      |
| <i>Ampelopsis quinquefolia</i> ..... | ....   | ....   | ....  | ....  | ....   | 50    | 50      |
| <i>Malus communis</i> .....          | ....   | ....   | ....  | ....  | ....   | 100   | 100     |
| <i>Euonymus americana</i> .....      | ....   | ....   | ....  | ....  | ....   | 150   | 150     |
| <i>Lespedeza bicolor alba</i> .....  | ....   | ....   | ....  | ....  | ....   | 700   | 700     |
| <i>Rhododendron maximum</i> .....    | ....   | ....   | ....  | ....  | ....   | 40    | 40      |
| <i>Kalmia latifolia</i> .....        | ....   | ....   | ....  | ....  | ....   | 20    | 20      |
|                                      | 90,487 | 21,175 | 1,025 | 7,045 | 40,301 | 6,405 | 166,438 |

#### SHRUB PLANTING



In order to furnish extended nesting facilities for the ringneck pheasant, acreage planted to alfalfa is gradually being increased. Likewise, *Lespedeza sericea* shows promise of being adaptable to the area, and acreage supporting this valuable wildlife plant is being increased annually. Soil conservation practices have been inaugurated and contour strips are finding a definite place in the management schedule for the area.

#### COVER DEVELOPMENT



Cover of this type is created by cutting down trees that have grapevines in their crowns. The grapevine being left intact grows over the fallen tree.

## DEVELOPMENT IN THE APPALACHIAN VALLEY REGION

### Wallpack Public Shooting and Fishing Ground

This 387.5 acre tract is located in Sussex County on the Wallpack-Flatbrookville Road. The famed Big Flat Brook flows past historic Haney Mill and courses the center of the area. The wooded slopes of Wallpack Ridge and the Kittatinny Mountain margin the west and east boundaries respectively.

In order to correct the startling deficiency in food and cover on the lowland and terraces of the area, a consistent and progressive planting program is necessary.

Improvements accomplished to date are listed as follows:

| Project                           | 1936      | 1937 | 1938 | 1939  | 1940    | Total    |
|-----------------------------------|-----------|------|------|-------|---------|----------|
| Rail fence constructed .....      | 6,045 ft. | .... | .... | ....  | ....    | 6,045 ft |
| Road constructed .....            | 0.1 mi.   | .... | .... | ....  | ....    | 0.1 mi.  |
| Parking area .....                | 1 A.      | .... | .... | ....  | ....    | 1 A.     |
| Fireplaces and tables constructed | 6         | .... | .... | ....  | ....    | 6        |
| Razing of undesirable buildings.. | 3         | .... | .... | ....  | ....    | 3        |
| Woodland cleaned .....            | 0 A.      | .... | .... | ....  | ....    | 10 A.    |
| Well shelter constructed .....    | 1         | .... | .... | ....  | ....    | 1        |
| Soil preparation .....            | ....      | .... | 5 A. | 18 A. | 19.7 A. | 42.7 A   |
| Fence construction .....          | ....      | .... | .... | ....  | 75 rds. | 75 rds.  |
| Buildings constructed .....       | ....      | .... | .... | ....  | 1       | 1        |

### COVER PLANTING ALONG RAIL FENCE





# 1939 DEVELOPMENT PLAN OF CLINTON TRACT

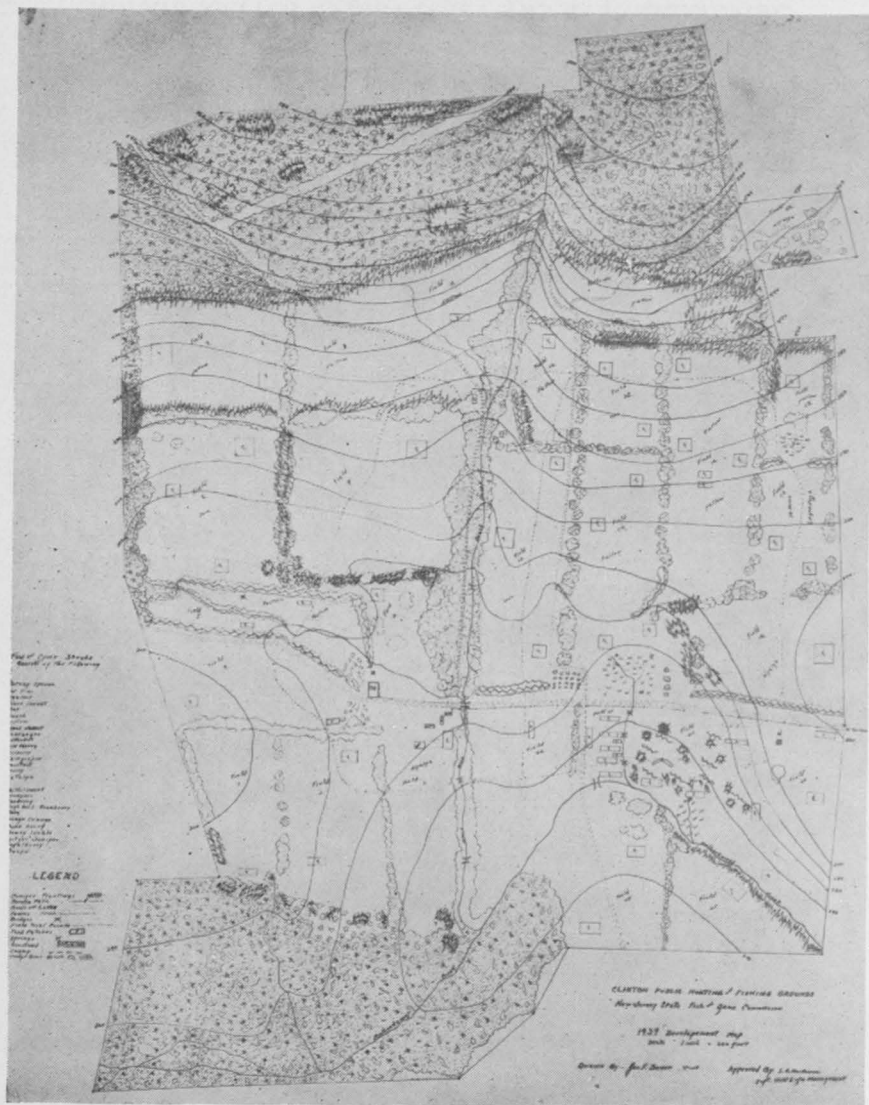


FIGURE III

## FOOD AND COVER SHRUBS CONSIST OF THE FOLLOWING

|               |                 |
|---------------|-----------------|
| Norway Spruce | Holly           |
| Red Pine      | Catalpa         |
| Hemlock       | Bittersweet     |
| Black Locust  | Euonymus        |
| Oak           | Barberry        |
| Beech         | High Bush       |
| Willow        | Cranberry       |
| Black Walnut  | Rose            |
| Crataegus     | Osage Orange    |
| Butternut     | Junecberry      |
| Wild Cherry   | Honeysuckle     |
| Mulberry      | Pfitzer Juniper |
| Chinquapin    | Coralberry      |
| Chestnut      | Grape           |

Plantings have been made as follows:

| Species                              | 1935   | 1936   | 1937 | 1938  | 1939   | 1940  | Total  |
|--------------------------------------|--------|--------|------|-------|--------|-------|--------|
| <i>Picea abies</i> .....             | 13,000 | 3,500  | ...  | ...   | ...    | ...   | 16,500 |
| <i>Pinus resinosa</i> .....          | 8,000  | 8,500  | ...  | ...   | 2,500  | ...   | 19,000 |
| <i>Maclura pomifera</i> .....        | 1,150  | ...    | ...  | 2,050 | 3,900  | ...   | 7,100  |
| <i>Salix</i> spp. ....               | 1,150  | ...    | ...  | ...   | ...    | ...   | 1,150  |
| <i>Viburnum opulus</i> .....         | 1,000  | ...    | ...  | ...   | ...    | ...   | 1,000  |
| <i>Crataegus</i> spp. ....           | 500    | ...    | ...  | ...   | ...    | ...   | 500    |
| <i>Euonymus bungeanus</i> .....      | 500    | ...    | ...  | ...   | ...    | 50    | 550    |
| <i>Berberis thunbergii</i> .....     | 1,500  | ...    | ...  | ...   | 1,580  | 825   | 3,905  |
| <i>Tsuga canadensis</i> .....        | 25     | 2,000  | ...  | ...   | ...    | ...   | 2,025  |
| <i>Lonicera japonica</i> .....       | 500    | 1,500  | ...  | ...   | ...    | ...   | 2,000  |
| <i>Fagus grandifolia</i> .....       | ...    | 800    | ...  | ...   | ...    | ...   | 800    |
| <i>Pinus strobus</i> .....           | ...    | 250    | ...  | ...   | ...    | ...   | 250    |
| <i>Rubus</i> spp. ....               | ...    | 500    | ...  | ...   | ...    | ...   | 500    |
| <i>Symphoricarpos vulgaris</i> ..... | ...    | ...    | ...  | 10    | ...    | 50    | 60     |
| <i>Rosa nitida</i> .....             | ...    | ...    | ...  | 75    | 60     | 100   | 235    |
| <i>Rosa palustris</i> .....          | ...    | ...    | ...  | 10    | ...    | 100   | 110    |
| <i>Rosa multiflora</i> .....         | ...    | ...    | ...  | ...   | 30     | 50    | 80     |
| <i>Morus alba</i> .....              | ...    | ...    | ...  | ...   | 100    | 100   | 200    |
| <i>Rosa humilis</i> .....            | ...    | ...    | ...  | ...   | 30     | ...   | 30     |
| <i>Prunus padus</i> .....            | ...    | ...    | ...  | ...   | 50     | ...   | 50     |
| <i>Prunus virginiana</i> .....       | ...    | ...    | ...  | ...   | 10     | 50    | 60     |
| <i>Castanea crenata</i> .....        | ...    | ...    | ...  | ...   | 25     | ...   | 25     |
| <i>Celastrus scandens</i> .....      | ...    | ...    | ...  | ...   | 5,100  | 400   | 5,500  |
| <i>Pueraria thunbergiana</i> .....   | ...    | ...    | ...  | ...   | ...    | 25    | 25     |
| <i>Caragana arborescens</i> .....    | ...    | ...    | ...  | ...   | ...    | 25    | 25     |
| <i>Rhamnus cathartica</i> .....      | ...    | ...    | ...  | ...   | ...    | 50    | 50     |
| <i>Malus communis</i> .....          | ...    | ...    | ...  | ...   | ...    | 10    | 10     |
| <i>Lespedeza bicolor alba</i> .....  | ...    | ...    | ...  | ...   | ...    | 100   | 100    |
| <i>Aronia arbutifolia</i> .....      | ...    | ...    | ...  | ...   | ...    | 13    | 13     |
| <i>Malus coronaria</i> .....         | ...    | ...    | ...  | ...   | ...    | 120   | 120    |
| <i>Prunus avium</i> .....            | ...    | ...    | ...  | ...   | ...    | 25    | 25     |
| Total.....                           | 27,325 | 17,050 | ...  | 2,145 | 13,385 | 2,093 | 61,998 |

#### Hainesville Public Shooting and Fishing Ground

This attractive Sussex County area, consisting of 281.5 acres, is located a short distance east of Hainesville and is traversed by Little Flat Brook.

To date work on this area has been designed to broaden existing hedgerows and create new cover lanes in order to improve the efficiency and distribution of cover.

Plantings have been completed as follows:

| Species                              | 1935   | 1936   | 1937 | 1938 | 1939  | 1940  | Total  |
|--------------------------------------|--------|--------|------|------|-------|-------|--------|
| <i>Picea abies</i> .....             | 6,700  | 7,800  | ...  | ...  | ...   | ...   | 14,500 |
| <i>Pinus resinosa</i> .....          | 7,000  | ...    | ...  | ...  | 800   | ...   | 7,800  |
| <i>Viburnum opulus</i> .....         | 1,000  | ...    | ...  | ...  | ...   | ...   | 1,000  |
| <i>Crataegus</i> spp. ....           | 500    | ...    | ...  | ...  | ...   | ...   | 500    |
| <i>Euonymus bungeanus</i> .....      | 500    | ...    | ...  | ...  | ...   | 50    | 550    |
| <i>Berberis thunbergii</i> .....     | 1,500  | ...    | ...  | ...  | 1,550 | 175   | 3,225  |
| <i>Lonicera japonica</i> .....       | 500    | ...    | ...  | ...  | ...   | ...   | 500    |
| <i>Fagus grandifolia</i> .....       | ...    | 2,050  | ...  | ...  | ...   | ...   | 2,050  |
| <i>Quercus borealis</i> .....        | ...    | 900    | ...  | ...  | ...   | ...   | 900    |
| <i>Rosa multiflora</i> .....         | ...    | ...    | ...  | ...  | 30    | ...   | 30     |
| <i>Morus alba</i> .....              | ...    | ...    | ...  | ...  | 100   | 150   | 250    |
| <i>Rosa nitida</i> .....             | ...    | ...    | ...  | ...  | 70    | 100   | 170    |
| <i>Rosa humilis</i> .....            | ...    | ...    | ...  | ...  | 40    | ...   | 40     |
| <i>Prunus padus</i> .....            | ...    | ...    | ...  | ...  | 45    | ...   | 45     |
| <i>Rosa palustris</i> .....          | ...    | ...    | ...  | ...  | 20    | 200   | 220    |
| <i>Castanea crenata</i> .....        | ...    | ...    | ...  | ...  | 25    | ...   | 25     |
| <i>Pueraria thunbergiana</i> .....   | ...    | ...    | ...  | ...  | ...   | 25    | 25     |
| <i>Celastrus scandens</i> .....      | ...    | ...    | ...  | ...  | ...   | 250   | 250    |
| <i>Caragana arborescens</i> .....    | ...    | ...    | ...  | ...  | ...   | 34    | 34     |
| <i>Rhamnus cathartica</i> .....      | ...    | ...    | ...  | ...  | ...   | 50    | 50     |
| <i>Symphoricarpos vulgaris</i> ..... | ...    | ...    | ...  | ...  | ...   | 50    | 50     |
| <i>Lespedeza bicolor alba</i> .....  | ...    | ...    | ...  | ...  | ...   | 150   | 150    |
| <i>Malus coronaria</i> .....         | ...    | ...    | ...  | ...  | ...   | 80    | 80     |
| Total.....                           | 17,700 | 10,750 | ...  | ...  | 2,680 | 1,314 | 32,444 |

## CONIFER PLANTING



Wherever study indicates it is the proper procedure, the area is reforested

### Roy Public Shooting and Fishing Ground

This area contains 287.10 acres and is located in Sussex County on the east side of the road from Bevans to Wallpack. The area is coursed by Big Flat Brook.

Plantings installed on this area are as follows:

| Species                              | 1936  | 1937  | 1938 | 1939  | 1940  | Total  |
|--------------------------------------|-------|-------|------|-------|-------|--------|
| <i>Pinus resinosa</i> .....          | 3,500 | 6,000 | ...  | 800   | ....  | 10,300 |
| <i>Pinus sylvestris</i> .....        | ...   | 500   | ...  | ....  | ....  | 500    |
| <i>Maclura pomifera</i> .....        | ...   | 2,100 | ...  | ....  | 150   | 2,250  |
| <i>Picea abies</i> .....             | 2,000 | ...   | ...  | ....  | ....  | 2,000  |
| <i>Quercus rubra</i> .....           | 100   | ...   | ...  | ....  | ....  | 100    |
| <i>Fagus grandifolia</i> .....       | 100   | ...   | ...  | ....  | ....  | 100    |
| <i>Rosa multiflora</i> .....         | ...   | ...   | ...  | 30    | ....  | 30     |
| <i>Rosa nitida</i> .....             | ...   | ...   | ...  | 60    | ....  | 60     |
| <i>Morus alba</i> .....              | ...   | ...   | ...  | 100   | 25    | 125    |
| <i>Rosa humilis</i> .....            | ...   | ...   | ...  | 30    | ....  | 30     |
| <i>Berberis thunbergi</i> .....      | ...   | ...   | ...  | 1,460 | 1,000 | 2,460  |
| <i>Prunus padus</i> .....            | ...   | ...   | ...  | 50    | ....  | 50     |
| <i>Prunus virginiana</i> .....       | ...   | ...   | ...  | 10    | ....  | 10     |
| <i>Castanea crenata</i> .....        | ...   | ...   | ...  | 25    | ....  | 25     |
| <i>Pueraria thunbergiana</i> .....   | ...   | ...   | ...  | ....  | 25    | 25     |
| <i>Celastrus scandens</i> .....      | ...   | ...   | ...  | ....  | 350   | 350    |
| <i>Rosa palustris</i> .....          | ...   | ...   | ...  | ....  | 100   | 100    |
| <i>Caragana arborescens</i> .....    | ...   | ...   | ...  | ....  | 25    | 25     |
| <i>Symphoricarpos vulgaris</i> ..... | ...   | ...   | ...  | ....  | 50    | 50     |
| <i>Lespedeza bicolor alba</i> .....  | ...   | ...   | ...  | ....  | 150   | 150    |
| <i>Aronia arbutifolia</i> .....      | ...   | ...   | ...  | ....  | 15    | 15     |
| <i>Malus coronaria</i> .....         | ...   | ...   | ...  | ....  | 100   | 100    |
| <i>Prunus avium</i> .....            | ...   | ...   | ...  | ....  | 25    | 25     |
| Totals.....                          | 5,700 | 8,600 | ...  | 2,565 | 2,015 | 18,880 |

## VANNEST STATE GAME REFUGE

This 92 acre sanctuary area is located in Mercer County on the Mercerville-Clarksville Road, and borders the southern bank of the Assumpink Creek. This area was developed with the intent that as many forms of wildlife as possible would find a haven, and future growth of the plantings would create an area of natural beauty. In addition, the area has been chosen as a location for experimental plantings.

The following work has been accomplished on the area:

| Project                              | 1939      |
|--------------------------------------|-----------|
| Food areas cleared .....             | 1 Acre    |
| Food areas stumped .....             | 1 Acre    |
| Soil preparation .....               | 10 Acres  |
| Ponds constructed .....              | 1         |
| Bridge constructed .....             | 1         |
| Forest stand improvement .....       | 15 Acres  |
| Post and rail fence constructed..... | 2,100 ft. |
| Clearing pond site .....             | 2 Acres   |
| Trail construction .....             | 0.8 Mi.   |
| Fire hazard reduction .....          | 25 Acres  |

## LESPEDeza SERICEA



A two year planting of this valuable legume in the upper coastal plain

In order that environment be improved and the area beautified, the following plantings were made:

| Species                              | 1938  | 1939  | 1940  | Total  |
|--------------------------------------|-------|-------|-------|--------|
| <i>Viburnum opulus</i> .....         | ..... | ..... | 5     | 5      |
| <i>Maclura pomifera</i> .....        | 25    | 50    | 100   | 175    |
| <i>Berberis thunbergi</i> .....      | 2,425 | 500   | ..... | 2,925  |
| <i>Symphoricarpos vulgaris</i> ..... | 15    | 25    | 50    | 90     |
| <i>Rosa nitida</i> .....             | 35    | 25    | ..... | 60     |
| <i>Rosa palustris</i> .....          | 10    | ..... | ..... | 10     |
| <i>Rosa humilus</i> .....            | 10    | 50    | ..... | 60     |
| <i>Prunus pennsylvanica</i> .....    | 12    | ..... | ..... | 12     |
| <i>Celastrus scandens</i> .....      | 110   | 500   | 100   | 710    |
| <i>Pinus strobus</i> .....           | 2,300 | ..... | ..... | 2,300  |
| <i>Pinus resinosa</i> .....          | 1,500 | ..... | 500   | 2,000  |
| <i>Picea abies</i> .....             | 2,200 | ..... | 500   | 2,700  |
| <i>Rosa multiflora</i> .....         | ..... | 25    | ..... | 25     |
| <i>Morus alba</i> .....              | ..... | 50    | 100   | 150    |
| <i>Prunus padus</i> .....            | ..... | 10    | ..... | 10     |
| <i>Prunus virginiana</i> .....       | ..... | 10    | ..... | 10     |
| <i>Juglans nigra</i> .....           | ..... | 25    | ..... | 25     |
| <i>Lonicera japonica</i> .....       | ..... | 25    | ..... | 25     |
| <i>Pueraria thunbergiana</i> .....   | ..... | ..... | 10    | 10     |
| <i>Caragana arborescens</i> .....    | ..... | ..... | 25    | 25     |
| <i>Rhamnus cathartica</i> .....      | ..... | ..... | 10    | 10     |
| <i>Aronia arbutifolia</i> .....      | ..... | ..... | 10    | 10     |
| <i>Malus coronaria</i> .....         | ..... | ..... | 25    | 25     |
| <i>Euonymus americana</i> .....      | ..... | ..... | 10    | 10     |
| <i>Euonymus bungeanus</i> .....      | ..... | ..... | 10    | 10     |
| <i>Lespedeza bicolor alba</i> .....  | ..... | ..... | 25    | 25     |
| <i>Quercus rubra</i> .....           | ..... | ..... | 100   | 100    |
| Totals.....                          | 8,642 | 1,295 | 1,580 | 11,517 |

#### MISCELLANEOUS ACTIVITIES

It has been the duty and pleasure of the Wild Game Management Division to give advice and cooperation to those clubs, associations, and individuals interested in environmental improvement for wildlife species. The realization that every animal is dependent upon plants every moment of its life in either a direct or indirect way is constantly extending in scope. Active application of this fact brightens considerably the horizon of future wildlife populations.

Food and cover plantings have been made by groups or committees of the following organizations as follows:

Hunterdon Rod and Gun Club No. 3, Frenchtown, N. J.  
 Hunterdon Rod and Gun Club No. 4, Bloomsbury, N. J.  
 Guinea Hollow Rod and Gun Club, Sidney, N. J.  
 Somerset Fish and Game Protective Asso., Somerville, N. J.  
 Warren County Rod and Gun Club No. 1, Phillipsburg, N. J.  
 Warren County Rod and Gun Club No. 2, Belvidere, N. J.  
 Warren County Rod and Gun Club, No. 5, Oxford, N. J.

Plantings consisted mainly of *Picea abies*, *Pinus resinosa*, *Berberis thunbergi*, *Celastrus scandens*, *Euonymus americana*, *Lespedeza bicolor alba*, *Rosa* spp., *Morus alba*, *Symphoricarpos vulgaris*, and *Malus coronaria*.



## THE BEAVER PROBLEM

Occasionally the engineering prowess of this very interesting animal creates conditions due to flooding that become undesirable to persons residing in or about the area inundated. It has been the practice to live trap the beaver colonies and transplant them to areas wherein their presence is desired. It is gratifying to note that requests for beaver stocking always exceed the supply of these interesting animals.

### BEAVER



Annual beaver trapping has been as follows:

| Year       | Number of animals trapped<br>and transplanted |
|------------|-----------------------------------------------|
| 1936 ..... | 22                                            |
| 1937 ..... | 9                                             |
| 1938 ..... | 43                                            |
| 1939 ..... | 9                                             |
| 1940 ..... | 10                                            |
| Total..... | 93                                            |

## THE RABBIT PROBLEM

In certain localities, the cottontail rabbit does severe damage to desirable plant life. Utilizing box traps and by driving to nets, these animals are apprehended and reliberated on the open lands of the State. Sportsmen cooperation in this detail has been very valuable.

Rabbit trapping and reliberation, resulting from rabbit damage complaints, has been as follows:

| Year       | Number of rabbits trapped<br>and reliberated |
|------------|----------------------------------------------|
| 1937 ..... | 152                                          |
| 1938 ..... | 150                                          |
| 1939 ..... | 34                                           |
| 1940 ..... | 267                                          |
| Total..... | 603                                          |

## THE DEER PROBLEM

During the spring of 1938 it became the duty of this division to study the problem of deer damage to farm crops. Sufficient data has been gathered to warrant a separate publication and the following data is a very brief resume of the problem.

The trend of the extent of deer damage complaints is indicated by the following chart:

| Year                            | Number of Deer<br>Damage Com-<br>plaints Received | No. of<br>Permits<br>Issued | No. of Deer<br>Reported<br>Killed |
|---------------------------------|---------------------------------------------------|-----------------------------|-----------------------------------|
| July 1, 1937-June 30, 1938..... | 88                                                | 76                          | 116                               |
| July 1, 1938-June 30, 1939..... | 113                                               | 57                          | 23                                |
| July 1, 1939-June 30, 1940..... | 128                                               | 73                          | 16                                |

Legitimate complaints increased by 40 during the interval from July 1, 1937 to June 30, 1940. This is equivalent to a 45.5% increase. The majority of complaints were received from Burlington, Atlantic, Monmouth, Camden, and Ocean Counties, in the order above listed.

The relationship of damage to the various crops produced in southern New Jersey is shown by data gathered in this regard during the interval of July 1, 1938-June 30, 1939.

| Crop                   | No. of Times<br>Damaged | Nature of Damage               |
|------------------------|-------------------------|--------------------------------|
| Cultivated Blueberries | 14                      | Bud, blossom, fruit            |
| Beans .....            | 13                      | Foliage, fruit                 |
| Sweet Potatoes .....   | 13                      | Foliage, tubers (fleshy roots) |
| Tomatoes .....         | 13                      | Foliage, fruit                 |
| Beets .....            | 7                       | Foliage                        |
| Strawberries .....     | 7                       | Foliage                        |
| Cucumbers .....        | 5                       | Foliage, fruit                 |
| Carrots .....          | 7                       | Foliage and fleshy root        |
| Spinach .....          | 5                       | Foliage                        |
| Cabbage .....          | 5                       | Foliage                        |
| Lettuce .....          | 5                       | Foliage                        |
| Watermelons .....      | 3                       | Foliage and melon              |
| Cantaloupes .....      | 4                       | Foliage and melon              |
| Nursery stock .....    | 3                       | Foliage                        |
| White Potatoes .....   | 2                       | Foliage                        |
| Broccoli .....         | 2                       | Foliage                        |
| Turnips .....          | 2                       | Root                           |
| Corn .....             | 1                       | Mature grain                   |
| Kale .....             | 1                       | Foliage                        |
| Celery .....           | 1                       | Foliage                        |
| Raspberry .....        | 2                       | Foliage                        |
| Apples .....           | 1                       | Bark and twigs                 |
| Peach .....            | 1                       | Bark and twigs                 |
| Escarolle .....        | 1                       | Foliage                        |

This list does not include the inspection of complaints received in regard to the browsing of wheat and rye during the winter months. The list does, however, include practically every fruit or vegetable grown in the pine region.

Considerable effort was directed toward a solution of crop damage by utilizing repellents of a chemical nature, frightening devices of mechanical derivation, and electric fences of various kinds and types of installation. The following is a brief reference to the results of the several efforts.

### 1. REPELLENTS OF A CHEMICAL NATURE.

The wide variety of repellents applied to several crops either failed or gave only temporary relief from deer depredations. The high cost of materials and labor attached to frequent application necessitated by heavy and regular precipitation makes the use of repellents expensive. Inasmuch as most repellents are of an obnoxious nature, their use is made undesirable on marketable plants or fruit.

### 2. MECHANICAL DEVICES.

Blinker lights, flares, lanterns, rotating lights, and flash guns, were given thorough trials under a variety of conditions. Of the aggregate, the carbide flash gun has given the most promise. By means of such an apparatus, deer were repelled from small fields. However, it is necessary that the device be cleaned and loaded daily, and a maintenance problem is created that consigns the apparatus to the category of an emergency control resulting in no solution of the problem.

### 3. ELECTRIC FENCES.

During the past three years, six electric fences varying in length from  $\frac{1}{4}$  mile to  $1\frac{1}{4}$  mile in length have been built, maintained, and studied by the New Jersey Fish and Game Commission. Early attempts to utilize a two strand electric fence, the bottom wire of which was 20" from the ground, with a top wire 15" above, failed utterly and in all cases to repel deer in New Jersey. This failure was partly caused by the fact that the sandy surface of soils in the pine region dries very swiftly and becomes a poor conductor. At times observers would experience a shock only when contact was made with the damper soil an inch or two beneath the sandy surface. On several occasions deer were seen carefully to enter the two-wire fence without difficulty either beneath the lower wire or between the wires. Increasing the shocking power of the unit by the addition of more powerful coils by a technician of the Atlantic City Power and Light Company, failed to increase the efficiency of the two-wire assembly.

In order to create a more effective electric fence assembly, three fences utilizing three strands of four barbed hog wire were erected. On this assembly the bottom wire was 14" from the ground, the center wire was 14" above the bottom wire and the top or third wire was 18" above the center strand. The bottom and top wires were live and the middle or center strand was a ground wire, which was grounded at regular intervals. It was intended to increase the possibility of creating a shock by making it possible for an animal to complete the circuit between wires as well as between a live wire and the ground. The performance of this type of installation is as follows:

A three wire fence  $\frac{1}{4}$  mile in length constructed around a blueberry patch at Red Lion has functioned with good results since the spring of 1939.

A three wire fence  $\frac{3}{8}$  mile in length constructed around a raspberry patch at Hammonton has functioned with good results since the spring of 1939.

A three wire fence  $1\frac{1}{4}$  mile in length constructed around a cranberry bog at Brookville protected the bog from deer travel until the fence was destroyed by persons unknown, at which time the fence was abandoned.

A three wire fence around a blueberry patch at Sunken Branch has failed to repel deer in a satisfactory manner.

Three wire fences constructed at Atsion and Indian Mills failed to perform and were changed to four wire assemblies. The bottom wire was placed 10" from the ground with a distance of 11" between each of the remaining three wires.

The overall height of the four strand assembly is 43". The bottom and third wires are ground wires and are grounded at regular intervals. The second and top wires are live wires. This installation is more effective than the three wire assembly. However, deer occasionally make their entrance to the field. It is felt that these two fences situated in areas of large deer concentration are about 75% effective.

The fact that most fields are surrounded by woodland necessitates the construction of the electric fence in or close to the woods. Therefore, each storm or wind of any magnitude causes limbs to fall across the fence, thereby causing the fence to fail. Deer going through the fence and receiving a shock sometimes tear the wires from the insulators, thereby shorting the fence. A considerable maintenance problem is necessary to proper electric fence performance. However, it is felt that the electric fence has a place in deer control, particularly on those lands that are leased for short periods.

The maintenance problem connected with electric fences as well as the evident necessity of more than two strands has made it desirable to investigate the practicability of permanent fencing. The Fish and Game Commission has built no permanent deerproof fences but we have watched with interest the results obtained from the efforts of private individuals in protecting themselves from deer damage by this means. To date the majority of permanent fences constructed by land owners have been made of barbed wire. An installation at Harrisville is a nine strand assembly with wires placed at 9", 15", 21", 27", 33", 42", 54", 69", and 87" elevations. Posts are spaced at 20 feet apart with a wooden spreader at the 10 foot distance between posts. Deer have entered between the strands of this fence. An 8 wire assembly at Chatsworth has posts spaced at 9 foot intervals with strands located at the 10", 18", 26", 34", 42", 50", 62", and 74" elevations. Three vertical wires spaced at  $2\frac{1}{4}$  foot intervals between posts make this fence an 8" by 3 foot mesh to a height of 62 inches. It is reported that deer have entered this fence.

A study of deer movements in the pine region indicates that the maximum travel within a habitat is 2 miles during the winter. Such a movement invariably leads to a cultivated field if such a field exists in that locality. It was thought that specially prepared areas inserted along the general lines of travel would divert deer from their agricultural objective. During the summer and fall of 1938, ten experimental areas were constructed in woodland areas along recognized lines of deer travel. This

work was accomplished by means of a crawler type tractor, Marden Brush Cutter and Case Brush Breaker. They were subsequently planted to Rye and Lespedeza sericea. The average size of the areas approximate 4 acres. The observed results are as follows:

| Area | Date Constructed | Date Planted | Deer utilizing area per 24 hours |           |           |            |           |            |
|------|------------------|--------------|----------------------------------|-----------|-----------|------------|-----------|------------|
|      |                  |              | Oct. 1938                        | Dec. 1938 | Jan. 1939 | April 1939 | Nov. 1939 | March 1940 |
| 1    | 8/16/39          | 9/27/38      | 3                                | 2         | 6         | 8          | 15        | 4          |
| 2    | 8/24/38          | 9/28/38      | 12                               | 3         | 10        | 10         | 6         | 6          |
| 3    | 8/27/38          | 9/29/38      | 2                                | 15        | 10        | 10         | 0         | 0          |
| 4    | 9/2/38           | 10/4/38      | 2                                | 8         | 10        | 20         | 15        | 12         |
| 5    | 9/8/38           | 10/10/38     | 2                                | 20        | 15        | 15         | 12        | 12         |
| 6    |                  | 9/11/38      | 3                                | 2         | 0         | 6          | 15        | 8          |
| 7    |                  | 9/19/38      | 0                                | 3         | 10        | 10         | 15        | 10         |
| 8    |                  | 9/21/38      | 0                                | 0         | 5         | 20         | 20        | 12         |
| 9    |                  | 9/27/38      | 0                                | 0         | 3         | 5          | 6         | 6          |
| 10   | 10/1/38          | 10/4/38      | 0                                | 0         | 2         | 8          | 12        | 6          |

The above referred to areas were planted in the autumn and it is hoped that spring plantings can be made in the future. Observations of areas planted in the spring would produce data which if coupled with the foregoing data would give an annual picture of the performance of prepared vegetational areas.

#### Deer Weights and Measurements

Initial weights and measurements were taken in southern New Jersey. Of 46 legal deer weighed, the average weight was 72.5 lbs. dressed weight. The maximum dressed weight encountered was 134 lbs. and the minimum dressed weight was 58 lbs.

In 1939 this practice was extended to northern New Jersey.

The following tabulations show the recorded data:



# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## Key:

Weight of animal.  
Length of animal—tip of nose to end of last vertebra, exclusive of hair.  
Length of tail—from base to end of last vertebra.  
Length of hind foot—from end of heel bone to end of hoof.

Height—from withers to tip of toe.  
Number of tines on antlers (R-right, L-left.)  
Spread of antlers at widest point.  
Diameter of main beam 1" above bur.  
Length of antler.  
Dentition.

## MALE DEER

| Deer No.                      | 1.                                              | 2.                                                        | 3.              | 4.           | 5.             | 6.                                              | 7.                       |
|-------------------------------|-------------------------------------------------|-----------------------------------------------------------|-----------------|--------------|----------------|-------------------------------------------------|--------------------------|
| Weight .....                  | 116 lbs.                                        | 119 lbs.                                                  | 131 lbs.        | 146 lbs.     | 108 lbs.       | 120 lbs.                                        | 103 lbs.                 |
| Length .....                  | 66"                                             | 63"                                                       | 70"             | 67"          | 63"            | 53½"                                            | 63"                      |
| Length of Tail..              | 12¼"                                            | 10¾"                                                      | 11"             | 13½"         | 10¾"           | 9¾"                                             | 10"                      |
| Length of Hind Foot .....     | 18½"                                            | 18¾"                                                      | 18"             | 19¾"         | 19"            | 18½"                                            | 17½"                     |
| Height .....                  | 36½"                                            | 36½"                                                      | 36"             | 35"          | 37½"           | 32¼"                                            | 35½"                     |
| No. of tines on antlers ..... | R-3<br>L-2*                                     | R-1<br>L-2*                                               | R-2<br>L-4*     | R-3<br>L-4   | R-2<br>L-spike | R-4<br>L-4                                      | R-spike<br>L-spike       |
| Spread of Antlers             | 10"                                             | 8¼"                                                       | 16"             | 9½"          | 8"             | 11½"                                            | 8¼"                      |
| Diameter of main beam ..      | R-1¼"<br>L-1"                                   | R-¾"<br>L-¾"                                              | R-1"<br>L-1"    | R-¾"<br>L-¾" | R-1"<br>L-7/8" | R-7/8"<br>L-1"                                  | R-5/8"<br>L-5/8"         |
| Length of Antler              | 7¾"                                             | 5½"                                                       | 8"              | 7"           | 5"             | 9"                                              | 7½"                      |
| Dentition .....               | 0 0 3 3                                         | 0 0 3 3                                                   | 0 0 3 3         | 0 0 3 3      | 0 0 3 3        | 0 0 3 3                                         | 0 0 3 2                  |
| Remarks .....                 | Lungs in. *1 tine broken. Shot Wall-pack Twshp. | Not cleaned. * bent. Left hind foot definitely club foot. | Clean * broken. | Not cleaned. | Clean          | Lungs and kidneys in. Shot near steam saw mill. | Liver, heart & lungs in. |

# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## MALE DEER

| Deer No.                         | 8.               | 9.              | 10.             | 11.           | 12.            | 13.            | 14.           |
|----------------------------------|------------------|-----------------|-----------------|---------------|----------------|----------------|---------------|
| Weight .....                     | 98 lbs.          | 114 lbs.        | 115 lbs.        | 101 lbs.      | 113 lbs.       | 107 lbs.       | 99 lbs.       |
| Length .....                     | 62½"             | 62¾"            | 61¼"            | 61¼"          | 60½"           | 62"            | 63"           |
| Length of Tail..                 | 10"              | 11"             | 12½"            | 13"           | 9½"            | 9"             | 9¼"           |
| Length of Hind<br>Foot .....     | 17½"             | 18"             | 18"             | 18"           | 17½"           | 17"            | 16½"          |
| Height .....                     | 34½"             | 37½"            | 36½"            | 36¼"          | 36"            | 36"            | 32¼"          |
| No. of tines on<br>Antlers ..... | R-spike<br>L-*   | R-4<br>L-3      | R-3<br>L-*      | R-<br>L-spike | R-2<br>L-3     | R-3<br>L-3     | R-2<br>L-2    |
| Spread of Antlers                | ...              | 12"             | ...             | ...           | 8"             | 9½"            | 8"            |
| Diameter of<br>main beam ...     | R-⅝"<br>L-*      | R-1"<br>L-¾"    | R-¾"<br>L-*     | R-¼"<br>L-¼"  | R-¾"<br>L-¾"   | R-¾"<br>L-¾"   | R-¾"<br>L-¾"  |
| Length of Antler                 | R-4½"<br>0 0 3 3 | 10¾"<br>0 0 3 3 | R-7"<br>0 0 3 3 | 3"<br>0 0 3 3 | 7½"<br>0 0 3 3 | 6¼"<br>0 0 3 3 | 6"<br>0 0 3 3 |
| Dentition .....                  | 4 0 3 3          | 4 0 3 3         | 4 0 3 3         | 4 0 3 3       | 4 0 3 3        | 4 0 3 3        | 4 0 3 3       |

|               |                                                                             |                                                        |                                           |                                                        |                                                              |                                     |                                                                   |
|---------------|-----------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------|
| Remarks ..... | Heart, liver<br>& lungs in.<br>*Broken off.<br>Shot in<br>Stokes<br>Forest. | Clean. Shot<br>in Stokes<br>Forest near<br>steam mill. | Lungs in.<br>Shot in<br>Stokes<br>Forest. | Clean. Shot<br>in Stokes<br>Forest near<br>steam mill. | Clean. Shot<br>in Stokes<br>Forest near<br>Sunrise<br>trail. | Clean. Shot<br>in Stokes<br>Forest. | Clean. Partly<br>Albino. Shot<br>in Stokes For-<br>est. Wallpack. |
|---------------|-----------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------|

# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## MALE DEER

| Deer No.                         | 15.                                   | 16.                                                      | 17.                                  | 18.                                  | 19.                                      | 20.                                                  | 21.                                                                 |
|----------------------------------|---------------------------------------|----------------------------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------|
| Weight .....                     | 94 lbs.                               | 94 lbs.                                                  | 113 lbs.                             | 115 lbs.                             | 171 lbs.                                 | 84 lbs.                                              | 102 lbs.                                                            |
| Length .....                     | 59"                                   | 60½"                                                     | 63½"                                 | 62"                                  | 71"                                      | 59"                                                  | 58"                                                                 |
| Length of Tail..                 | 11"                                   | 10½"                                                     | 11½"                                 | 12¼"                                 | 13"                                      | 9"                                                   | 11"                                                                 |
| Length of Hind<br>Foot .....     | 18"                                   | 18½"                                                     | 18"                                  | 17"                                  | 19"                                      | 17½"                                                 | 17½"                                                                |
| Height .....                     | 35"                                   | 35½"                                                     | 37"                                  | 37½"                                 | 40"                                      | 34½"                                                 | 34"                                                                 |
| No. of tines on<br>Antlers ..... | R-spike<br>L-spike                    | R-spike<br>L-spike                                       | R-2<br>L-spike                       | R-2<br>L-2                           | R-5<br>L-5                               | R-*<br>L-*                                           | R-spike<br>L-spike                                                  |
| Spread of Antlers                | 7"                                    | 5"                                                       | 6"                                   | 15"                                  | 21½"                                     | ....                                                 | 7"                                                                  |
| Diameter of<br>main beam ...     | R-⅝"<br>L-⅝"                          | R-½"<br>L-½"                                             | R-½"<br>L-½"                         | R-1"<br>L-¾"                         | R-1¾"<br>L-1½"                           | ....                                                 | R-¾"<br>L-¾"                                                        |
| Length of Antler                 | 6¼"                                   | 5½"                                                      | 5½"                                  | 8"                                   | 14"                                      | ....                                                 | 6"                                                                  |
| Dentition .....                  | 0 0 3 2<br>4 0 3 2                    | 0 0 3 2<br>4 0 3 2                                       | 0 0 3 3<br>4 0 3 3                   | 0 0 3 3<br>4 0 3 3                   | 0 0 3 3<br>4 0 3 3                       | 0 0 3 3<br>4 0 3 3                                   | 0 0 3 3<br>4 0 3 3                                                  |
| Remarks .....                    | Clean. Shot<br>near Sunrise<br>Trail. | Liver, lungs<br>& heart in.<br>Shot near<br>Snooks mill. | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>near C.C.C.<br>Camp S-71. | Clean.<br>*Broken off.<br>1 antler in<br>possession. | Liver, heart<br>in. Shot in<br>Stokes For-<br>est near<br>Wallpack. |

# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## MALE DEER

| Deer No.                         | 22.                                                         | 23.                                                    | 24.                                  | 25.                                  | 26.                                  | 27.                                  | 28.                                                |
|----------------------------------|-------------------------------------------------------------|--------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|----------------------------------------------------|
| Weight .....                     | 124 lbs.                                                    | 127 lbs.                                               | 119 lbs.                             | 148½ lbs.                            | 87 lbs.                              | 124 lbs.                             | 145 lbs.                                           |
| Length .....                     | 64½"                                                        | 69"                                                    | 67½"                                 | 69"                                  | 60"                                  | 67¾"                                 | 70"                                                |
| Length of Tail..                 | 10½"                                                        | 12"                                                    | 9½"                                  | 11½"                                 | 10½"                                 | 12½"                                 | 13½"                                               |
| Length of Hind<br>Foot .....     | 18"                                                         | 19"                                                    | 18"                                  | 18½"                                 | 17½"                                 | 19"                                  | 19¼"                                               |
| Height .....                     | 38"                                                         | 38"                                                    | 33"                                  | 42"                                  | 34"                                  | 37¼"                                 | 37¾"                                               |
| No. of tines on<br>Antlers ..... | R-3<br>L-4                                                  | R-4<br>L-3                                             | R-4<br>L-5                           | R-4<br>L-5                           | R-spike<br>L-spike                   | R-4<br>L-3                           | R-4<br>L-*                                         |
| Spread of Antlers                | 11"                                                         | 12"                                                    | 14"                                  | 15"                                  | 7"                                   | 15"                                  | ....                                               |
| Diameter of<br>main beam ...     | R-7/8"<br>L-1"                                              | R-¾"<br>L-¾"                                           | R-7/8"<br>L-7/8"                     | R-1¼"<br>L-1¼"                       | R-½"<br>L-½"                         | R-1"<br>L-1"                         | R-1"<br>L-*                                        |
| Length of Antler                 | 7½"                                                         | 10½"                                                   | 10"                                  | 10¾"                                 | 6½"                                  | 12½"                                 | ....                                               |
| Dentition .....                  | <u>0 0 3 3</u><br>4 0 3 3                                   | <u>0 0 3 3</u><br>4 0 3 3                              | <u>0 0 3 3</u><br>4 0 3 3            | <u>0 0 3 3</u><br>4 0 3 3            | <u>0 0 3 2</u><br>4 0 3 2            | <u>0 0 3 3</u><br>4 0 3 3            | <u>0 0 3 3</u><br>4 0 3 3                          |
| Remarks .....                    | Liver, lungs<br>& heart in.<br>Shot in<br>Stokes<br>Forest. | Lungs and<br>heart in.<br>Shot in<br>Stokes<br>Forest. | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>in Wallpack<br>Twshp.<br>*Shot off. |

# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## MALE DEER

| Deer No.                         | 29.                                  | 30.                                  | 31.                                                     | 32.                                             | 33.                                                                      | 34.                         | 35.                  |
|----------------------------------|--------------------------------------|--------------------------------------|---------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------------------------|-----------------------------|----------------------|
| Weight .....                     | 95½ lbs.                             | 116 lbs.                             | 120½ lbs.                                               | 87½ lbs.                                        | 92½ lbs.                                                                 | 100 lbs.                    | 116 lbs.             |
| Length .....                     | 60"                                  | 70"                                  | 65¼"                                                    | 60"                                             | 57"                                                                      | 62¾"                        | 62½"                 |
| Length of Tail..                 | 10½"                                 | 13½"                                 | 12½"                                                    | 8½"                                             | 8½"                                                                      | 10¾"                        | 11"                  |
| Length of Hind<br>Foot .....     | 17½"                                 | 19"                                  | 20"                                                     | 16½"                                            | 17"                                                                      | 16½"                        | 18¾"                 |
| Height .....                     | 34"                                  | 38"                                  | 35¾"                                                    | 35½"                                            | 35"                                                                      | 34"                         | 37"                  |
| No. of tines on<br>Antlers ..... | R-2<br>L-2                           | R-2<br>L-3                           | R-3<br>L-2                                              | R-2<br>L-2                                      | R-spike<br>L-spike                                                       | R-spike<br>L-spike          | R-2<br>L-*           |
| Spread of Antlers                | 9½"                                  | 11"                                  | 10"                                                     | 10"                                             | Broke*                                                                   | 4"                          | ....*                |
| Diameter of<br>main beam ...     | R-¾"<br>L-⅝"                         | R-¾"<br>L-¾"                         | R-1"<br>L-1"                                            | R-¾"<br>L-¾"                                    | R-½"<br>L-½"                                                             | R-½"<br>L-½"                | R-¾"<br>L-*          |
| Length of Antler                 | 7¼"                                  | 10"                                  | 8¼"                                                     | 6"                                              | 5"                                                                       | 5"                          | R-7½"                |
|                                  | 0 0 3 3                              | 0 0 3 3                              | 0 0 3 3                                                 | 0 0 3 3                                         | 0 0 3 3                                                                  | 0 0 3 3                     | 0 0 3 3              |
| Dentition .....                  | 4 0 3 3                              | 4 0 3 3                              | 4 0 3 3                                                 | 4 0 3 3                                         | 4 0 3 3                                                                  | 4 0 3 3                     | 4 0 3 3              |
| Remarks .....                    | Clean. Shot<br>in Wallpack<br>Twshp. | Clean. Shot<br>in Wallpack<br>Twshp. | Lungs and<br>heart in.<br>Shot in<br>Wallpack<br>Twshp. | Clean. Shot<br>at Worth-<br>ington Es-<br>tate. | Heart, lungs<br>& liver in.<br>*Broken off.<br>Spike in pos-<br>session. | Heart, lungs<br>& liver in. | Clean. *Shot<br>off. |



# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## MALE DEER

| Deer No.                         | 36.            | 37.          | 38.          | 39.          | 40.          | 41.            | 42.                |
|----------------------------------|----------------|--------------|--------------|--------------|--------------|----------------|--------------------|
| Weight .....                     | 170 lbs.       | 117½ lbs.    | 123 lbs.     | 119 lbs.     | 99½ lbs.     | 100½ lbs.      | 94 lbs.            |
| Length .....                     | 70½"           | 68"          | 66¾"         | 67"          | 59"          | 64½"           | 59"                |
| Length of Tail..                 | 14"            | 10½"         | 12¼"         | 11½"         | 10"          | 9½"            | 8½"                |
| Length of Hind<br>Foot .....     | 20"            | 19¼"         | 18½"         | 19"          | 17½"         | 17½"           | 17"                |
| Height .....                     | 43¼"           | 39"          | 37½"         | 41¼"         | 35¾"         | 34½"           | 33½"               |
| No. of tines on<br>Antlers ..... | R-4<br>L-4     | R-2<br>L-4   | R-3<br>L-4   | R-3<br>L-3   | R-2<br>L-2   | R-spike<br>L-2 | R-spike<br>L-spike |
| Spread of Antlers                | 18½"           | 19½"         | 14½"         | 8½"          | 8½"          | 9"             | 8"                 |
| Diameter of<br>main beam ...     | R-1¼"<br>L-1¼" | R-¾"<br>L-¾" | R-¾"<br>L-1" | R-¾"<br>L-¾" | R-¾"<br>L-¾" | R-¾"<br>L-7/8" | R-5/8"<br>L-5/8"   |
| Length of Antler                 | 11½"           | 8"           | 10¼"         | 7¼"          | 7"           | 7"             | 7¾"                |
| Dentition .....                  | 0 0 3 3        | 0 0 3 3      | 0 0 3 3      | 0 0 3 3      | 0 0 3 2*     | 0 0 3 3        | 0 0 3 3            |

|               |                                                                        |                             |                             |                             |                                                                                        |                                                       |        |
|---------------|------------------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------|--------|
| Remarks ..... | Heart in.<br>Shot in Wall-<br>pack Twshp.<br>near Flat-<br>brookville. | Clean. Shot<br>near Layton. | Clean. Shot<br>near Layton. | Clean. Shot<br>near Layton. | Heart and<br>lungs in.<br>Shot near<br>Wallpack.<br>*3-premolars<br>are milk<br>teeth. | Clean. ¾ Al-<br>bino. Head<br>& shoulders<br>natural. | Clean. |
|---------------|------------------------------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------|--------|

# DEER WEIGHT AND MEASUREMENT REPORT FOR NORTH JERSEY

Killed in Sussex County, New Jersey, December 18th to 21st, 1939.

## MALE DEER

| Deer No.                         | 43.                                                                                 | 44.                                  | 45.                                  | 46.                                  | 47.                                  | 48.                                                                | 49.                                                                |
|----------------------------------|-------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| Weight .....                     | 90½ lbs.                                                                            | 124 lbs.                             | 141½ lbs.                            | 99 lbs.                              | 116 lbs.                             | 118 lbs.                                                           | 130 lbs.                                                           |
| Length .....                     | 61½"                                                                                | 56½"                                 | 68½"                                 | 66"                                  | 63½"                                 | 70½"                                                               | 67"                                                                |
| Length of Tail..                 | 9½"                                                                                 | 12"                                  | 12¼"                                 | 12½"                                 | 11"                                  | 13¾"                                                               | 11"                                                                |
| Length of Hind<br>Foot .....     | 18½"                                                                                | 18½"                                 | 16"                                  | 18½"                                 | 19"                                  | 19½"                                                               | 19½"                                                               |
| Height .....                     | 34"                                                                                 | 39"                                  | 40"                                  | 37½"                                 | 35½"                                 | 36"                                                                | 37½"                                                               |
| No. of tines on<br>Antlers ..... | R-spike<br>L-3                                                                      | R-4<br>L-3                           | R-4<br>L-4                           | R-3<br>L-3                           | R-3<br>L-2                           | R-spike<br>L-2                                                     | R-4<br>L-4                                                         |
| Spread of Antlers                | *                                                                                   | 14"                                  | 14"                                  | 8"                                   | 10½"                                 | 8½"                                                                | 15"                                                                |
| Diameter of<br>main beam ...     | R-¾"<br>L-¾"                                                                        | R-7⁄8"<br>L-7⁄8"                     | R-1¼"<br>L-1¼"                       | R-¾"<br>L-¾"                         | R-¾"<br>L-¾"                         | R-¾"<br>L-¾"                                                       | R-1"<br>L-1"                                                       |
| Length of Antler                 | R-6¼"<br>0 0 3 3                                                                    | 12¼"<br>0 0 3 3                      | 13"<br>0 0 3 3                       | 7"<br>0 0 3 3                        | 7½"<br>0 0 3 3                       | 7½"<br>0 0 3 3                                                     | 8¾"<br>0 0 3 3                                                     |
| Dentition .....                  | 4 0 3 3                                                                             | 4 0 3 3                              | 4 0 3 3                              | 4 0 3 3                              | 4 0 3 3                              | 4 0 3 3                                                            | 4 0 3 3                                                            |
| Remarks .....                    | Clean. *Left<br>antler grows<br>over the left<br>eye. Shot in<br>Montague<br>Twshp. | Clean. Shot<br>in Montague<br>Twshp. | Clean. Shot<br>in Montague<br>Twshp. | Clean. Shot<br>in Montague<br>Twshp. | Clean. Shot<br>in Montague<br>Twshp. | Clean. Shot<br>in Sandy-<br>stone Twshp.<br>near Haines-<br>ville. | Clean. Shot<br>in Sandy-<br>stone Twshp.<br>near Haines-<br>ville. |

Average Dressed Weight .....114.4 lbs.

# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## Key:

Weight in pounds, cleaned. Where heart and liver were present the following note, (H-L in), is typed beneath.

Length of animal in inches, tip of nose to end of last vertebra exclusive of hair.

Length of tail in inches, from base to end of last vertebra.

Length of hind foot in inches, from end of heel bone to end of hoof.

Height in inches, from withers to tip of toe.

Number of tines on each antler, right (R) and left (L).

Spread of antlers in inches, inside measurements at widest point.

Diameter of main beam, one inch above bur.

Length of antlers.

Spread of antlers in inches, between tips.

Distance in inches between burs.

Dentition.

## MALE DEER

| Deer No.                         | 1.                     | 2.                  | 3.                  | 4.                  | 5.                  | 6.                  | 7.                  |
|----------------------------------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Weight .....                     | 143 lbs.               | 66 lbs.             | 74 lbs.             | 103 lbs.            | 100 lbs.            | 104 lbs.            | 100 lbs.            |
| Length .....                     | 75"                    | 56 1/4"             | 63"                 | 61 1/4"             | 63 3/4"             | 66 3/4"             | 65 3/4"             |
| Length of Tail..                 | 12 3/4"                | 9 3/4"              | 10 1/2"             | 9 1/2"              | 10 1/4"             | 13 3/4"             | 11 1/2"             |
| Length of Hind Foot .....        | 19 1/2"                | 16 1/2"             | 16 1/2"             | 17"                 | 17 1/2"             | 18"                 | 16"                 |
| Height .....                     | 41"                    | 32 3/4"             | 30 3/4"             | 32 1/2"             | 35"                 | 38 1/2"             | 34"                 |
| No. of tines on Antlers .....    | R-5<br>L-5             | R-1<br>L-broken     | R-2<br>L-1          | R-4<br>L-4          | R-4<br>L-4          | R-3<br>L-3          | R-4<br>L-4          |
| Spread of Antlers                | 19"                    | ....                | 4 1/2"              | 17 1/2"             | 12 3/4"             | 11 1/2"             | 18 1/2"             |
| Diameter of main beam ...        | 1 1/8"                 | 7/16"               | 9/16"               | 1"                  | 7/8"                | 3/4"                | 1 1/4"              |
| Length of Antler                 | 11 1/4"                | 4"                  | 6"                  | 8 1/4"              | 9 1/2"              | 10 1/2"             | 13 1/4"             |
| Distance between tips of Antlers | ....                   | ....                | ....                | 16 3/4"             | 10"                 | 7 1/2"              | 10 3/4"             |
| Between Burs ..                  | 2 3/4"                 | 2 3/4"              | 2 1/2"              | 2 1/2"              | 2 1/2"              | 2 3/4"              | 2 3/4"              |
| Dentition .....                  | 0 0 3 3<br>4 0 3 3     | 0 0 0 1*            | 0 0 2 3*            | 0 0 3 3<br>4 0 3 3  | 0 0 3 3<br>4 0 3 3  | 0 0 3 3<br>4 0 3 3  | 0 0 3 3<br>4 0 3 3  |
| Remarks .....                    | Killed in E. Vineland. | Killed in Weymouth. | Killed in Weymouth. | Killed in Weymouth. | Killed in Weymouth. | Killed in Weymouth. | Killed in Weymouth. |

\* Remainder of teeth — milk teeth.

# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## MALE DEER

| Deer No.                            | 8.                        | 9.                                 | 10.                                             | 11.                   | 12.                            | 13.                  | 14.                  |
|-------------------------------------|---------------------------|------------------------------------|-------------------------------------------------|-----------------------|--------------------------------|----------------------|----------------------|
| Weight .....                        | 105 lbs.                  | 72 lbs.<br>(H-L in)                | 78 lbs.                                         | 100 lbs.              | 71 lbs.                        | 91 lbs.              | 110 lbs.             |
| Length .....                        | 65"                       | 56"                                | 60"                                             | 67"                   | 60"                            | 62"                  | 66"                  |
| Length of Tail..                    | 10½"                      | 12"                                | 10"                                             | 11"                   | 10¼"                           | 11¼"                 | 9"                   |
| Length of Hind<br>Foot .....        | 17"                       | 16½"                               | 16"                                             | 17½"                  | 16¾"                           | 16½"                 | 16½"                 |
| Height .....                        | 38¾"                      | 32"                                | 33½"                                            | 37½"                  | 33"                            | 34"                  | 36"                  |
| No. of tines on<br>Antlers .....    | R-4<br>L-4                | R-1<br>L-1                         | R-3<br>L-2                                      | R-4<br>L-3            | R-1<br>L-1                     | R-4<br>L-4           | R-4<br>L-4           |
| Spread of Antlers                   | 13"                       | 4"                                 | 8¾"                                             | 14½"                  | 3¾"                            | 9½"                  | 15¾"                 |
| Diameter of<br>main beam ...        | 1"                        | ½"                                 | ¾"                                              | 7⁄8"                  | ½"                             | 1"                   | 1"                   |
| Length of Antler                    | 10½"                      | 5"                                 | 9"                                              | 12"                   | 5"                             | 6½"                  | 9½"                  |
| Distance between<br>tips of Antlers | 9½"                       | 3½"                                | 6½"                                             | ....                  | 2½"                            | 6¼"                  | 11½"                 |
| Between Burs ..                     | 2"                        | 2½"                                | 2¼"                                             | 2½"                   | 2"                             | 2¼"                  | 2¼"                  |
| Dentition .....                     | 0 0 3 3                   | 0 0 0 2*                           | 0 0 3 3                                         | 0 0 3 3               | 0 0 1 2*                       | 0 0 3 3              | 0 0 3 3              |
|                                     | 4 0 3 3                   | 4 0 0 2                            | 4 0 3 3                                         | 4 0 3 3               | 4 0 1 2                        | 4 0 3 3              | 4 0 3 3              |
| Remarks .....                       | Killed in<br>Corbin City. | Killed at<br>Head of the<br>River. | Killed at<br>South River<br>Game Pre-<br>serve. | Killed at<br>Cologne. | Killed in<br>Mullica<br>Twshp. | Killed at<br>Elwood. | Killed at<br>Elwood. |

\* Remainder of teeth — milk teeth.

# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## MALE DEER

| Deer No.                            | 15.                  | 16.                       | 17.                       | 18.                       | 19.                  | 20.                   | 21.                      |
|-------------------------------------|----------------------|---------------------------|---------------------------|---------------------------|----------------------|-----------------------|--------------------------|
| Weight .....                        | 104 lbs.             | 110 lbs.                  | 119 lbs.                  | 96 lbs.                   | 128 lbs.             | 85 lbs.               | 110 lbs.                 |
| Length .....                        | 66"                  | 65"                       | 67"                       | 60 $\frac{3}{4}$ "        | 66 $\frac{1}{2}$ "   | 63 $\frac{1}{4}$ "    | 66"                      |
| Length of Tail..                    | 11"                  | 10 $\frac{3}{4}$ "        | 11 $\frac{3}{4}$ "        | 11"                       | 10 $\frac{1}{4}$ "   | 10 $\frac{1}{2}$ "    | 9 $\frac{1}{2}$ "        |
| Length of Hind<br>Foot .....        | 17"                  | 16 $\frac{1}{2}$ "        | 18 $\frac{1}{4}$ "        | 15 $\frac{3}{4}$ "        | 18"                  | 17"                   | 18"                      |
| Height .....                        | 36 $\frac{1}{2}$ "   | 35"                       | 39"                       | 34 $\frac{3}{4}$ "        | 40 $\frac{3}{4}$ "   | 33 $\frac{1}{2}$ "    | 38"                      |
| No. of tines on<br>Antlers .....    | R-3<br>L-3           | R-4<br>L-4                | R-5<br>L-5                | R-3<br>L-3                | R-4<br>L-4           | R-3<br>L-3            | R-4<br>L-4               |
| Spread of Antlers                   | 9"                   | 12 $\frac{3}{4}$ "        | 13 $\frac{1}{2}$ "        | 9 $\frac{3}{4}$ "         | 19 $\frac{1}{2}$ "   | 11 $\frac{1}{2}$ "    | 13"                      |
| Diameter of<br>main beam ...        | 1 $\frac{1}{4}$ "    | 1"                        | 1"                        | $\frac{3}{4}$ "           | 1 $\frac{5}{8}$ "    | $\frac{3}{4}$ "       | 1"                       |
| Length of Antler                    | 9 $\frac{1}{2}$ "    | 10 $\frac{3}{4}$ "        | 9"                        | 8 $\frac{1}{2}$ "         | 11 $\frac{1}{2}$ "   | 7 $\frac{1}{4}$ "     | 11"                      |
| Distance between<br>tips of Antlers | 7"                   | 11"                       | 7"                        | 6 $\frac{3}{4}$ "         | 12 $\frac{1}{4}$ "   | 9"                    | 8"                       |
| Between Burs ..                     | 2"                   | 2 $\frac{1}{2}$ "         | 2 $\frac{1}{2}$ "         | 2 $\frac{1}{2}$ "         | 2 $\frac{1}{2}$ "    | 2 $\frac{1}{2}$ "     | 2 $\frac{3}{4}$ "        |
| Dentition .....                     | 0 0 3 3              | 0 0 3 3                   | Teeth<br>Shot             | 0 0 3 3                   | 0 0 3 3              | 0 0 3 3               | 0 0 3 3                  |
|                                     | 4 0 3 3              | 4 0 3 3                   | Out                       | 4 0 3 3                   | 4 0 3 3              | 4 0 3 3               | 4 0 3 3                  |
| Remarks .....                       | Killed in<br>Elwood. | Killed in<br>Belle Plain. | Killed in<br>Belle Plain. | Killed in<br>Belle Plain. | Killed in<br>Loudon. | Killed in<br>Hampton. | Killed in<br>Tabernacle. |



# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## MALE DEER

| Deer No.                            | 22.                       | 23.                             | 24.                            | 25.                            | 26.                        | 27.                        | 28.                       |
|-------------------------------------|---------------------------|---------------------------------|--------------------------------|--------------------------------|----------------------------|----------------------------|---------------------------|
| Weight .....                        | 130 lbs.                  | 70 lbs.                         | 77 lbs.<br>(H-L in)            | 64 lbs.<br>(H-L in)            | 80 lbs.<br>(H-L in)        | 70 lbs.                    | 94 lbs.<br>(H-L in)       |
| Length .....                        | 70½"                      | 53"                             | 61½"                           | 58"                            | 59"                        | 56½"                       | 58½"                      |
| Length of Tail..                    | 12"                       | 8"                              | 8½"                            | 10"                            | 9"                         | 9½"                        | 10½"                      |
| Length of Hind<br>Foot .....        | 17½"                      | 15"                             | 16½"                           | 16"                            | 16½"                       | 16"                        | 16¼"                      |
| Height .....                        | 38½"                      | 31"                             | 31"                            | 31½"                           | 33½"                       | 29¾"                       | 33"                       |
| No. of tines on<br>Antlers .....    | R-7<br>L-5                | R-1<br>L-broken                 | R-2<br>L-3                     | R-1<br>L-1                     | R-1<br>L-broken            | R-2<br>L-1                 | R-broken<br>L-2           |
| Spread of Antlers                   | 20"                       | ....                            | 8¼"                            | 5"                             | ....                       | 5½"                        | ....                      |
| Diameter of<br>main beam ...        | 1¼"                       | 7/16"                           | ¾"                             | ½"                             | ½"                         | 9/16"                      | 9/16"                     |
| Length of Antler                    | 13⅞"                      | 3½"                             | 6½"                            | 3"                             | 5¾"                        | 4"                         | 7½"                       |
| Distance between<br>tips of Antlers | 17"                       | ....                            | 8"                             | 5"                             | ....                       | 5"                         | ....                      |
| Between Burs ..                     | 4"                        | ....                            | 2½"                            | 2¼"                            | 2½"                        | 2"                         | 3"                        |
| Dentition .....                     | <u>0 0 3 3</u><br>4 0 3 3 | <u>0 0 0 1*</u><br>4 0 0 1      | <u>0 0 3 3</u><br>4 0 3 3      | <u>0 0 2 2*</u><br>4 0 2 2     | <u>0 0 0 2*</u><br>2 0 0 2 | <u>0 0 2 2*</u><br>4 0 2 2 | <u>0 0 3 3</u><br>4 0 3 3 |
| Remarks .....                       | Killed in<br>Goose Pond.  | Killed at<br>Apple Pie<br>Hill. | Killed at<br>Johnson<br>Place. | Killed at<br>Johnson<br>Place. | Killed at<br>Jones Mill.   | Killed at<br>Jones Mill.   | Killed on<br>the Plains.  |

\* Remainder of teeth—milk teeth.

# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## MALE DEER

| Deer No.                            | 29.                             | 30.                                | 31.                                | 32.                                | 33.                      | 34.                      | 35.                             |
|-------------------------------------|---------------------------------|------------------------------------|------------------------------------|------------------------------------|--------------------------|--------------------------|---------------------------------|
| Weight .....                        | 76 lbs.                         | 93 lbs.<br>(H-L in)                | 65 lbs.                            | 99 lbs.                            | 75 lbs.                  | 71 lbs.                  | 116 lbs.                        |
| Length .....                        | 60"                             | 60½"                               | 52½"                               | 62¾"                               | 57½"                     | 55½"                     | 62¼"                            |
| Length of Tail..                    | 9"                              | 10¾"                               | 11"                                | 11¼"                               | 9½"                      | 8½"                      | 9"                              |
| Length of Hind<br>Foot .....        | 17"                             | 17"                                | 16¼"                               | 17¾"                               | 17"                      | 16½"                     | 17¾"                            |
| Height .....                        | 33¼"                            | 35"                                | 33½"                               | 37"                                | 32½"                     | 34"                      | 36½"                            |
| No. of tines on<br>Antlers .....    | R-3<br>L-broken                 | R-2<br>L-2                         | R-1<br>L-1                         | R-4<br>L-3                         | R-1<br>L-2               | R-1<br>L-1               | R-4<br>L-4                      |
| Spread of Antlers                   | 9"                              | 9½"                                | 3¾"                                | 14"                                | 4"                       | 3½"                      | 16¼"                            |
| Diameter of<br>main beam ...        | 7/8"                            | 9/16"                              | 7/16"                              | 7/8"                               | ½"                       | ½"                       | 1"                              |
| Length of Antler                    | 7½"                             | 6¾"                                | 4"                                 | 10½"                               | 5"                       | 3½"                      | 12½"                            |
| Distance between<br>tips of Antlers | broken<br>2½"                   | 7"<br>2¾"                          | 3"<br>2¾"                          | broken<br>3"                       | 2¾"<br>2½"               | 3"<br>2½"                | 13¾"<br>2¼"                     |
| Between Burs ..                     | 0 0 2 2*                        | 0 0 3 3                            | 0 0 0 2*                           | 0 0 3 3                            | 0 0 0 2*                 | 0 0 0 2*                 | 0 0 3 3                         |
| Dentition .....                     | 4 0 2 2                         | 4 0 3 3                            | 4 0 0 2                            | 4 0 3 3                            | 4 0 0 2                  | 4 0 0 2                  | 4 0 3 3                         |
| Remarks .....                       | Killed at<br>Shreves<br>Branch. | Killed in<br>Penn State<br>Forest. | Killed in<br>Penn State<br>Forest. | Killed in<br>Penn State<br>Forest. | Killed at<br>Chatsworth. | Killed at<br>Chatsworth. | Killed at<br>Braddocks<br>Mill. |

\* Remainder of teeth—milk teeth.

# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## MALE DEER

| Deer No.                            | 36.                             | 37.                  | 38.                  | 39.                     | 40.                     | 41.                     | 42.                     |
|-------------------------------------|---------------------------------|----------------------|----------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Weight .....                        | 117 lbs.                        | 128 lbs.             | ....                 | 89 lbs.                 | 105 lbs.                | 106 lbs.                | 105 lbs.                |
| Length .....                        | 65"                             | 69 1/2"              | ....                 | 58"                     | 64"                     | 66"                     | 64"                     |
| Length of Tail..                    | 9"                              | 9"                   | ....                 | 8 1/2"                  | 10"                     | 11"                     | 10 1/4"                 |
| Length of Hind<br>Foot .....        | 18"                             | 17"                  | ....                 | 17"                     | 17"                     | 17 1/4"                 | 16 3/4"                 |
| Height .....                        | 34 3/4"                         | 35 1/2"              | ....                 | 35"                     | 35 1/2"                 | 35"                     | 37 1/4"                 |
| No. of tines on<br>Antlers .....    | R-4<br>L-4                      | R-6<br>L-6           | R-3<br>L-3           | R-3<br>L-3              | R-3<br>L-broken         | R-broken<br>L-broken    | R-4<br>L-4              |
| Spread of Antlers                   | 13 3/4"                         | 17 1/2"              | 19 1/4"              | 11"                     | ....                    | 15"                     | 13 1/2"                 |
| Diameter of<br>main beam ...        | 1"                              | 1 3/4"               | 1 1/4"               | 3/4"                    | 1/2"                    | 1 1/4"                  | 1 1/4"                  |
| Length of Antler                    | 11"                             | 15"                  | 10 1/2"              | 9"                      | 9"                      | 13"                     | 10"                     |
| Distance between<br>tips of Antlers | 10"                             | 14"                  | 19"                  | 9"                      | ....                    | 11 1/2"                 | 10 1/2"                 |
| Between Burs ..                     | 2 3/4"                          | 2 1/2"               | 2 3/4"               | 3"                      | 2 1/2"                  | 2 3/4"                  | 2 1/2"                  |
| Dentition .....                     | 0 0 3 3                         | 0 0 3 3              | No                   | 0 0 3 3                 | 0 0 3 3                 | 0 0 3 3                 | 0 0 3 3                 |
|                                     | 4 0 3 3                         | 4 0 3 3              | Record               | 4 0 3 3                 | 4 0 3 3                 | 4 0 3 3                 | 4 0 3 3                 |
| Remarks .....                       | Killed at<br>Braddocks<br>Mill. | Killed at<br>Goshen. | Killed at<br>Goshen. | Killed at<br>Tuckerton. | Killed at<br>Tuckerton. | Killed at<br>Tuckerton. | Killed at<br>Tuckerton. |

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## MALE DEER

| Deer No.                            | 43.                     | 44.                     | 45.                       | 46.                   | 47.                   | 48.                    | 49.                    |
|-------------------------------------|-------------------------|-------------------------|---------------------------|-----------------------|-----------------------|------------------------|------------------------|
| Weight .....                        | 96 lbs.                 | 94 lbs.                 | 85 lbs.<br>(H-L in)       | 97 lbs.               | 66 lbs.               | 108 lbs.               | 96 lbs.                |
| Length .....                        | 63 $\frac{3}{4}$ "      | 62"                     | 61 $\frac{1}{4}$ "        | 59"                   | 53 $\frac{1}{4}$ "    | 62 $\frac{1}{2}$ "     | 61 $\frac{1}{2}$ "     |
| Length of Tail..                    | 9"                      | 9 $\frac{1}{2}$ "       | 10 $\frac{1}{2}$ "        | 10 $\frac{1}{2}$ "    | 9"                    | 12"                    | 10 $\frac{1}{2}$ "     |
| Length of Hind<br>Foot .....        | 17"                     | 16 $\frac{1}{2}$ "      | 16 $\frac{3}{4}$ "        | 17"                   | 16"                   | 17"                    | 17"                    |
| Height .....                        | 34 $\frac{1}{2}$ "      | 34 $\frac{1}{2}$ "      | 36 $\frac{1}{2}$ "        | 35 $\frac{1}{4}$ "    | 32 $\frac{1}{4}$ "    | 36"                    | 34"                    |
| No. of tines on<br>Antlers .....    | R-4<br>L-4              | R-3<br>L-3              | R-2<br>L-2                | R-4<br>L-4            | R-1<br>L-1            | R-4<br>L-4             | R-3<br>L-3             |
| Spread of Antlers                   | 13"                     | 13"                     | 6"                        | 12 $\frac{1}{2}$ "    | 5 $\frac{1}{2}$ "     | 17"                    | 11"                    |
| Diameter of<br>main beam ...        | 1"                      | 1"                      | $\frac{3}{4}$ "           | $\frac{7}{8}$ "       | $\frac{1}{2}$ "       | 1 $\frac{1}{4}$ "      | $\frac{3}{4}$ "        |
| Length of Antler                    | 9 $\frac{3}{4}$ "       | 10 $\frac{1}{4}$ "      | 6 $\frac{1}{2}$ "         | 8 $\frac{3}{4}$ "     | 3"                    | 10 $\frac{1}{4}$ "     | 8 $\frac{1}{2}$ "      |
| Distance between<br>tips of Antlers | 9 $\frac{3}{4}$ "       | 12"                     | 4"                        | 9 $\frac{1}{2}$ "     | 5 $\frac{1}{2}$ "     | 12 $\frac{3}{4}$ "     | 8 $\frac{3}{4}$ "      |
| Between Burs ..                     | 2 $\frac{3}{4}$ "       | 2 $\frac{3}{4}$ "       | 2 $\frac{1}{4}$ "         | 2 $\frac{3}{4}$ "     | 2 $\frac{1}{4}$ "     | 3"                     | 2 $\frac{1}{2}$ "      |
| Dentition .....                     | 0 0 3 3<br>4 0 3 3      | 0 0 3 3<br>4 0 3 3      | 0 0 0 2*<br>4 0 0 2       | 0 0 3 3<br>4 0 3 3    | 0 0 0 2*<br>4 0 0 2   | 0 0 3 3<br>4 0 3 3     | 0 0 3 3<br>4 0 3 3     |
| Remarks .....                       | Killed at<br>Tuckerton. | Killed at<br>Tuckerton. | Killed at<br>East Plains. | Killed at<br>Whiting. | Killed at<br>Whiting. | Killed at<br>Pasadena. | Killed at<br>Pasadena. |

\* Remainder of teeth—milk teeth.

# DEER WEIGHT AND MEASUREMENT REPORT FOR SOUTH JERSEY

December 18th to 21st, 1939.

## FEMALE DEER (Illegal)

| Deer No.                     | 50.                      | 51.                                   |
|------------------------------|--------------------------|---------------------------------------|
| Weight .....                 | 56 lbs.                  | 94 lbs.                               |
| Length .....                 | 53"                      | 94" (tail off)                        |
| Length of Tail..             | 6"                       | (tail off)                            |
| Length of Hind<br>Foot ..... | 15"                      | 17"                                   |
| Height .....                 | 29"                      | 33½"                                  |
| Dentition .....              | 0 0 0 2*                 | 0 0 3 3                               |
|                              | 4 0 0 2                  | 4 0 3 3                               |
| Remarks .....                | Killed at<br>Chatsworth. | Killed at<br>Lebanon<br>State Forest. |

\* Remainder of teeth—milk teeth.

Average Dressed Weight.....92.6 lbs.

## WEIGHT AND MEASUREMENT REPORT OF DEER, 1939.

Disregarding age classes, the average weight of 49 legally killed deer in Sussex County was 114.4 lbs., and the average weight of 49 dressed legally killed deer in southern New Jersey was 92.6 lbs. As compared to the 1938 season in which South Jersey showed an average weight of 72 lbs., this represents an increase of 21.8 lbs. average weight.



## FEDERAL AID TO WILDLIFE PROJECTS

This intelligent Federal Conservation Legislation has been actively utilized by the New Jersey State Fish and Game Commission. The following is a resume of projects innovated and their status:

| Project No. | Type of Project  | Wildlife Species Benefited  | Location                                | Status       |
|-------------|------------------|-----------------------------|-----------------------------------------|--------------|
| 1-L         | Land Acquisition | Pheasant                    | Warren County                           | Completed    |
| 2-D         | Development      | "                           | " "                                     | "            |
| 3-R         | Research         | "                           | " "                                     | "            |
| 4-L         | Land Acquisition | Deer                        | Atlantic County                         | "            |
| 5-D         | Development      | "                           | " "                                     | Incomplete   |
| 6-R         | Research         | Rabbit                      | Gloucester County                       | "            |
| 7-R         | Research         | Pheasant                    | Warren and Hunterdon Counties           | "            |
| 8-L         | Land Acquisition | "                           | Somerset County                         | "            |
| 9-D         | Development      | "                           | " "                                     | Contemplated |
| 10-R        | Research         | Deer                        | Atlantic, Burlington and Ocean Counties | "            |
| 11-D        | Development      | Waterfowl, Quail and Rabbit | Cape May and Atlantic Counties          | "            |

In accordance with conditions specified by the Federal Aid to Wildlife authorities, the data and accomplishments will be reported by publication.

All projects, whether major or minor, are innovated and carried on with the intent that they shall contribute to the maintenance and increase of wildlife in New Jersey. In an ever changing world where conditions unfavorable to wildlife are being magnified, thought and action for future benefit are necessary if the citizen and sportsman of tomorrow is to have an opportunity of going afield with dog and gun.

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