

GOLF COURSE PESTICIDE USE IN NEW JERSEY – 2002 SURVEY

The New Jersey Pesticide Control Program (NJPCP) began a series of golf course pesticide use surveys in 1990. The specific purpose of this project is to identify what chemicals and how much of each are being used in on golf courses for trends analysis. A more general purpose of the survey is to supplement data gathered from previous pesticide use surveys for addressing the impact of pesticide use statewide. The survey is conducted every three years. This report focuses on the 2002 survey.

All statewide pesticide use surveys are performed under the authority of the New Jersey Pesticide Control Code, N.J.A.C. 7:30-1 et.seq., requiring applicators to maintain pesticide records for two years and to submit use records to the state when requested. This regulative authority provides an accuracy and level of response that is difficult to duplicate in a voluntary, nationwide survey. In fact, these New Jersey surveys almost represent a pesticide usage census rather than a probabilistic survey.

For 2002, surveys were mailed to all New Jersey golf courses. Survey forms, along with instructional letters and a return envelope, were mailed to the superintendent or responsible applicator asking for their 2002 pesticide use. A list of these golf courses was kept in the office and marked off as surveys were returned. Second and third mailings, the third being certified, were made to non-respondents indicating that the previously mailed survey had not been received.

Each survey form received by the PCP was entered into a database. When the data entry was completed the database was reviewed for any duplication of entries. Subroutines in the database identified active ingredients and calculated pounds of active ingredients from the information supplied by the applicators.

Once all three mailings were completed, 242 out of 265 (91%) surveys were received. Four of these indicated the course was no longer in business.

Table 1 lists the chemicals and their respective amounts appearing in the survey. Fungicides dominate golf course pesticide use.

Table 2 selects out the highest use compounds. Chlorothalonil was by far the most commonly used pesticide in 2002 on golf courses.

Table 3 shows pesticide use by site. Applications are relatively equal between Green/Tee and Fairway areas.

Table 4 lists pesticide use on golf courses by county and the number of golf courses surveyed in each county.

In reporting and evaluating pesticide use, it is important to consider the many, diverse influences on pesticide use. No single factor, or even set of factors, can completely account for fluctuations in the amounts of pesticide active ingredients used from survey to survey. Weather conditions such as temperature and rainfall, in terms of duration, timing and amounts or degrees, influence pest pressure and the associated response. In agricultural settings, issues such as cropping patterns and the associated pest impacts vary from year to year. Economic factors play a significant role, ranging from crop demand to golf course playability to product and/or service cost. Another factor is the adoption of IPM (Integrated Pest Management). Short term, some pest control situations may require increased pesticide applications beyond the alternative means contained in an IPM program. Long term, however, IPM should result in overall pesticide use reduction. This may be confounded by the increased use of reduced-risk alternatives that may have higher application rates than the materials they replace.

[Curt Brown, RSII]

Table 1. Pesticide amounts (lbs active ingredient) reported in the New Jersey 2002 Golf Course Pesticide Use Survey.

HERBICIDES:		Chlorpyrifos	2655
		Cyfluthrin	213
2,4-D	4586	Cyhalothrin	143
2,4-DP	8	Deltamethrin	58
Ammonium Sulfate	1	Dimethoate	1066
Benfluralin	445	Fenamiphos	214
Bensulide	1429	Fluvalinate	2
Carfentrazone	4	Halofenozide	2573
Chlorthal-dimethyl	23	Imidacloprid	7263
Clopyralid	348	Isazofos	28
Dicamba	861	Isofenphos	6
Dithiopyr	1786	Metaldehyde	1161
DSMA,MSMA	302	Permethrin	46
Ethofumesate	298	Resmethrin	1
Fenoxaprop-ethyl	125	Spinosad	1
Fluazifop-butyl	1	Trichlorfon	4925
Glufosinate-ammonium	14	TOTAL INSECTICIDES:	27991
Glyphosate	402		
Glyphosate-trimesium	9		
Isoxaben	6		
MCPA	117		
Mecoprop	1594		
Mefenoxam	124		
Metalochlor	33		
Oryzalin	50		
Oxadiazon	200		
Pelargonic acid	7		
Pendimethalin	1438		
Prodiamine	385		
Quinclorac	969		
Siduron	732		
Triclopyr	616		
Trifluralin	237		
TOTAL HERBICIDES:	17150		
		FUNGICIDES:	
		Azoxystrobin	1075
		Chloroneb	377
		Chlorothalonil	113353
		Copper	1430
		Cyproconazole	28
		Dazomet	99
		Etridiazole	396
		Fenarimol	162
		Fludioxonil	29
		Flutolanil	1263
		Fosetyl-al	22184
		Iprodione	17902
		Mancozeb	19856
		Metalaxyl	2902
		Myclobutanil	492
		PMA	9
		Polyoxin D	94
		Potassium bicarbonate	4
		Propamocarb HCl	18606
		Propiconazole	4396
		Quintozene	4732
INSECTICIDES:			
Acephate	292		
Bendiocarb	1397		
Bifenthrin	272		
Carbaryl	5675		

Thiophanate	18217
Thiophanate-methyl	2021
Thiram	4696
Triadimefon	6405
Trifloxystrobin	630
Vinclozolin	9619
TOTAL FUNGICIDES:	250977

GROWTH HORMONES:

Ethephon	1639
Flurprimidol	34
Hydramethylnon	1
Mefluidide	80
Paclobutrazol	407
Trinexapac-ethyl	2240
TOTAL GR HORMONES:	4401

BIRD REPELLENTS

Anthraquinone	56
TOTAL REPELLENTS:	56

TOTAL PESTICIDE USE: 301668

Herbicides:	6 %
Insecticides:	9 %
Fungicides:	83 %
Growth Hormones:	2 %
Bird Repellents:	0 %

Table 2. Highest use compounds from the main pesticide categories, 2002 golf course survey.
Shown are compounds $\geq 5\%$ of class.

Compound	Lbs active ingredient	% of class	% of total use
HERBICIDES:			
2,4-D	4586	26.7%	1.5%
Dithiopyr	1786	10.4%	0.6%
Mecoprop	1594	9.3%	0.5%
Pendimethalin	1438	8.4%	0.5%
Bensulide	1429	8.3%	0.5%
Benfluralin	1382	8.0%	0.4%
Quinclorac	969	5.6%	0.3%
Dicamba	861	5.0%	0.3%
INSECTICIDES:			
Imidacloprid	7263	25.9%	2.4%
Carbaryl	5675	20.3%	1.9%
Trichlorfon	4925	17.6%	1.6%
Chlorpyrifos	2655	9.5%	0.9%
Halofenozide	2573	9.2%	0.8%
Bendiocarb	1397	5.0%	0.5%
FUNGICIDES:			
Chlorothalonil	113353	45.2%	37.6%
Fosetyl-al	22184	8.8%	7.3%
Thiophanate/T-methyl	20238	8.1%	6.7%
Mancozeb	19856	7.9%	6.6%
Propamocarb HCl	18606	7.4%	6.2%
GROWTH HORMONES:			
Trinexapac-ethyl	2240	50.9%	0.7%
Ethephon	1639	37.2%	0.5%
Paclobutrazol	407	9.2%	0.1%

Table 3. Total pesticide amounts (in pounds active ingredient) applied to the various sites, 2002 golf course survey.

SITE	AMOUNT	% Total
Greens/Tees	142951	47%
Fairways	134616	45%
Rough	16822	6%
No site code	7280	2%

Table 4. Total pesticide amounts (in pounds active ingredient) by county, 2002 golf course survey.

COUNTY	# of Courses	Amount	% of Total
Atlantic	15	17507	5.8%
Bergen	18	32039	10.6%
Burlington	18	27376	9.1%
Camden	9	13928	4.6%
Cape May	7	7591	2.5%
Cumberland	2	353	0.1%
Essex	14	15063	5.0%
Gloucester	6	5555	1.8%
Hudson	0	0	0.0%
Hunterdon	6	13197	4.4%
Mercer	12	11287	3.7%
Middlesex	11	12638	4.2%
Monmouth	27	44643	14.8%
Morris	16	16766	5.6%
Ocean	13	9698	3.2%
Passaic	4	1978	0.7%
Salem	4	1941	0.6%
Somerset	19	31060	10.3%
Sussex	14	9129	3.0%
Union	10	24659	8.2%
Warren	7	5261	1.7%
	232	301668	100.0%