

LAWN CARE PESTICIDE USE IN NEW JERSEY: 2016 SURVEY

Introduction

The Office of Pesticide Evaluation & Monitoring (OPEM) began a series of pesticide use surveys in 1985. These surveys address pesticide use in the state of New Jersey for agriculture, golf courses, termite control, right-of-way, mosquito control, and lawn care. The lawn care survey is conducted every three years and targets pesticides used for lawn care purposes. This report focuses on the ninth survey completed in the lawn care series (2016).

All statewide pesticide use surveys are performed under the authority of the New Jersey Pesticide Control Code (NJPCP), N.J.A.C. 7:30-1 et.seq., requiring licensed applicators to maintain pesticide records for three 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 could represent a pesticide usage census rather than a probabilistic survey.

The information collected from the NJPCP pesticide use surveys is used by agencies within the NJ Department of Environmental Protection along with other state agencies to aid in research, exposure management and monitoring efforts in areas such as ground water protection, farm worker protection and education, and residual pesticide sampling. The survey data are also entered into state and federal geographical information systems for geographical distribution.

Survey Methods

The NJDEP Bureau of Licensing and Pesticide Operation's registration records were used to identify all 3,819 licensed commercial applicators holding a category 3B (turf) category on his or her license. Survey forms were mailed along with instructional letters and return envelopes asking for 2016 lawn care pesticide use. A total of three mailings (the first to lawn care businesses, the second to individuals and the third to non-respondents) were sent during the first seven months of 2017.

The survey requested information on each pesticide product used, including trade name, EPA registration number, percent active ingredient, amounts applied and number of acres treated.

Survey information was entered into a database file. This information file was then merged with a second database that linked trade names with chemical names, and a subprogram converted reported amounts of formulated product to amounts of active ingredient (lbs. a.i.).

Results & Discussion

Once all three mailings were completed, 2,823 out of 3,819 (74%) applicators were accounted for. Pesticides used by the lawn care industry in New Jersey for 2016 totaled 628,515 lbs. a.i. This response rate is the lowest since the first survey in 1990. Many surveys are being returned because applicators are not keeping their mailing address current. OPEM will forward “returned to sender” surveys to the Bureau of Licensing for follow-up. OPEM will also forward a list of non-responders to the Bureau of Compliance for follow-up.

Table 1 lists all the compounds reported in the 2016 survey and the amounts (lbs. a.i.) applied. Herbicides comprise 85% of the total pesticide use in the New Jersey lawn care industry. Fungicides (3%), insecticides (11%), growth inhibitors (<1%) and miscellaneous compounds (1%) account for the rest.

Table 2 lists the highest use compounds in the three-main lawn care pesticide categories (lbs. a.i.) as listed in Table 1. The most highly reported pesticides used in lawn care were 2,4-D formulation. These accounted for approximately 28% of the herbicides used in New Jersey lawn care in 2016. 2,4-D is used to control broadleaf weeds in a variety of applications including agriculture, right of way and aquatic weed control. 2,4-D formulations can be liquid, dust or granular.

Table 3 shows lawn care pesticide use by county. Passaic county had the highest use overall, with an increase from 4,129 lbs. a.i. in 2013 to 108,843 lbs. a.i. in 2016. Sussex and Atlantic counties also showed greater than a 50% increase in use from 2013. Lawn care pesticide use in Mercer and Monmouth counties decreased by 50% from 2013. It should be noted that county totals for lawn care pesticide use are difficult to quantify since many companies work in two or more counties and they do not report a total for each county, just total use over all their application sites. OPEM requests they identify which county received most of their applications and that is the information entered into the database.

There was a 2,636% increase in use in Passaic County from 2013 to 2016. Much of this use was reported in Upper Saddle River township. OPEM plans to conduct surface water monitoring to determine if there is any run-off impact from the dramatic use increase.

Figure 1 shows the total lbs. a.i. used in New Jersey for each lawn care survey conducted. The reported pesticide usage for lawn care has decreased by approximately 50% since the survey began in 1990. This may be attributed to an actual decrease in usage or could be associated with a low survey response rate. Since 1998, lawn care use averages around 500,000 lbs. a.i. per year.

Table 1. Pesticide amounts (lbs. a.i.) reported in the New Jersey 2016 Lawn Care Pesticide Use Survey.

*Indicates a compound not reported in the 2013 survey.

<u>HERBICIDES</u>	<u>lbs. a.i.</u>	<u>HERBICIDES</u>	<u>lbs. a.i.</u>
2,4-D	149,499	Isoxaben	606
2,4-DE	17	MCPA	87,906
2,4-DP	3,869	Mecoprop	23,814
2,4-DT	20,314	Mesotrione	794
Alachlor	30	Metolachlor	914
Amicarbazone	1	Metsulfuron *	28
Aminocyclopyrachlor	2	Metsulfuron-methyl*	5
Aminopyralid*	211	MSMA*	121
Benfluralin	122	Oryzalin	1,854
Bensulide	58	Oxadiazon*	13
Bromacil	28	Paraquat	3
Carfentrazone-ethyl	181	Pelargonic acid	393
Chlorsulfuron*	46	Pendimethalin	3,015
Clethodim*	6	Picloram*	6
Clopyralid	6,519	Penoxsulam	39
Dicamba	23,149	Primisulfuron	7
Dichlobenil	11	Prodiamine	30,459
Dimethenamid	11	Prometon	62
Diquat	159	Pyraflufen	3
Dithiopyr	69,660	Pyraflufen-ethyl	1
Diuron	377	Quinclorac	23,304
Fenoxaprop-ethyl	374	Sodium percarbonate	85
Florasulam*	36	Siduron	527
Fluazifop-butyl	2	Sulfentrazone	3,095
Fluroxypyr-meptyl	6,995	Topramezone	2
Fosamine ammonium*	10	Triclopyr	9,028
Glufosinate-ammonium	17	Trifluralin	2,468
Glyphosate	63,568		
Halosulfuron-methyl	597	Total:	534,553
Imazapyr	46		
Indaziflam*	86		

Table 1. (cont.)

FUNGICIDES	lbs. a.i.	INSECTICIDES	lbs. a.i.
Acibenzolar*	2	Acephate	13
Azoxystrobin	181	Acetamiprid	31
Boscalid	56	Bifenthrin	11,657
Chlorothalonil	8,029	Carbamate*	13
Cyazofamid	4	Carbaryl	1,197
Etridiazole	65	Chlorantraniliprole	290
Fluazinam	25	Chlorpyrifos	324
Fludioxonil	2	Cyfluthrin	36
Flumioxazin	23	Cyhalothrin (lambda)	279
Fluoxastrobin	9	Cypermethrin*	2
Flutolanil	28	Deltamethrin	66
Fluxapyroxad*	23	Diazinon	1
Fosetyl-al	1,057	Dinotefuran	7
Iprodione	1,171	Emamectin benzoate*	1
Mancozeb	272	Fluvalinate	12
Mefenoxam	89	Halofenozide	2
Metalaxyl	6	Hexythiazox	1
Myclobutanil	822	Imidacloprid	28,977
Paclobutrazol*	3	Indoxacarb	6
Penthiopyrad*	108	Oil	21,876
Polyoxin D*	1	Permethrin	113
Propamocarb HCL	145	Soap	1,408
Propiconazole	2,646	Spinosad	1
Pyraclostrobin	24	Trichlorfon	3,448
Quintozene	37	Total:	69,761
Tebuconazole	284		
Thiophanate-methyl	5,468		
Thiram*	3		
Triadimefon	175		
Trifloxystrobin	239		
Triticonazole	71		
Vinclozolin	112		
Total:	21,180		

Table 1. (cont.)

GROWTH INHIBITORS	lbs.a.i.	MISC	lbs. a.i.
Ethephon	132	BTI	453
Flurprimidol*	20	Anthraquinone	1,401
Paclobutrazol	3	Iron pholate	64
Trinexapac-ethyl	68	Neem oil	751
Total:	223	Potassium phosphate	128
		Sulfur	1
		Total:	2,798

Table 2. Highest use compounds in the New Jersey 2016 Lawn Care Pesticide Use Survey from the main pesticide categories.

Compound	Total (lbs. a.i.)	% of Category	% of Total Usage
HERBICIDES			
2,4-D Formulations	173,699	32	28
MCPA	87,906	16	14
Dithiopyr	69,660	13	11
Glyphosate	63,568	12	10
INSECTICIDES			
Imidacloprid	28,977	42	5
Oil	21,876	31	3
Bifenthrin	11,657	17	2
FUNGICIDES			
Chlorothalonil	8,029	38	1
Thiophanate-methyl	5,468	26	1
Propiconazole	2,646	12	<1

Table 3. Total pesticide amounts (lbs active ingredient) by county.

County	Amount (lbs. a.i.)	% of Total
Atlantic	32,158	5
Bergen	48,181	8
Burlington	20,760	3
Camden	50,828	8
Cape May	7,918	1
Cumberland	7,496	1
Essex	6,681	1
Gloucester	10,946	2
Hudson	334	<1
Hunterdon	9,802	2
Mercer	29,381	5
Middlesex	34,006	5
Monmouth	95,113	15
Morris	65,283	10
Ocean	24,419	4
Passaic	108,843	17
Salem	3072	<1
Somerset	33,436	5
Sussex	25,790	4
Union	5257	1
Warren	8809	1

Figure 1. Total lbs. a.i. used in New Jersey for each lawn care survey conducted (1990-2016).

