NJ Department of Environmental Protection
Pesticide Control Program
Pesticide Evaluation & Monitoring

GOLF COURSE PESTICIDE USE IN NEW JERSEY – 1999 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 1999 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 1999, 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 1999 pesticide use. A list of these golf courses was kept in the office and marked off as surveys were returned. Second and third mailings 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, 221 out of 245 (90%) surveys were received. Three 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 1999 on golf courses.

Table 3 shows pesticide use by site. Green/Tee areas received the highest overall pesticide use.

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. The changing face of land use also plays a part. While agricultural acreage has been declining, new home building starts and the associated lawns around those new homes have been increasing. 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 1999 Golf Course Pesticide Use Survey.

HERBICIDES:

2,4-D	3616
2,4-DP	64
Benfluralin	1382
Bensulide	2334
Bentazon	24
Chlorsulfuron	2
Chlorthal-dimethyl	458
Clopyralid	93
Dicamba	624
Dithiopyr	2486
DSMA,MSMA	208
Ethofumesate	309
Fenoxaprop-ethyl	108
Glufosinate-ammonium	70
Glyphosate	424
Imazapyr	<1
Isoxaben	60
MCPA	41
Mecoprop	1988
Mefenoxam	17
Metalochlor	23
Oryzalin	49
Oxadiazon	115
Paraquat	<1
Pelargonic acid	3
Pendimethalin	2327
Prodiamine	2601
Quinclorac	200
Siduron	296
Triclopyr	240
Trifluralin	517
TOTAL HERBICIDES:	20679

INSECTICIDES:

Acephate	1
Bendiocarb	1933
Bifenthrin	81
Carbaryl	2574
Chlorpyrifos	3454
Cyfluthrin	151
Cyhalothrin	64
DDVP	22
Dimethoate	1006
Fenamiphos	27
Fluvalinate	2
Fonofos	<1
Halofenozide	1509
Hexythiazox	<1
Imidacloprid	1018
Isazofos	49
Isofenphos	150
Metaldehyde	300
Propoxur	<1
Trichlorfon	3154
TOTAL INSECTICIDES:	15495

FUNGICIDES:

Anilazine	392
Azoxystrobin	1051
Benomyl	156
Chloroneb	907
Chlorothalonil	98111
Copper	471
Cyproconazole	252
Etridiazole	231
Fenarimol	182
Flutolanil	1419
Fosetyl-al	11804
Iprodione	13884
Mancozeb	15766
Mercurous Chloride	17
Metalaxyl	1910
Myclobutanil	672
PMA	16
Propamocarb HCl	15700
Propiconazole	1881
Quintozene	8085
Thiophanate	9917

Thiophanate-methyl	872
Thiram	5256
Triadimefon	4767
Vinclozolin	4928
TOTAL FUNGICIDES:	198647

GROWTH HORMONES:

Cycloheximide	15
Ethephon	1170
Flurprimidol	69
Mefluidide	68
Paclobutrazol	147
Trinexapac-ethyl	533
TOTAL GR HORMONES:	2002

BIRD REPELLENTS

Anthracenedione	21
TOTAL REPELLENTS:	21

TOTAL PESTICIDE USE: 236844

Herbicides:	9%
Insecticides:	6%
Fungicides:	84%
Growth Hormones:	1%
Bird Repellents:	0%

Table 2. Highest use compounds from the main pesticide categories, 1999 golf course survey. Shown are compounds >= 2% of class.

Compound	Lbs active ingredient	% of class	% of total use
HERBICIDES:			
2,4-D	3616	17.5%	1.4%
Prodiamine	2601	12.5%	1.0%
Dithiopyr	2486	12.0%	6.4%
Bensulide	2334	11.3%	0.9%
Pendimethalin	2327	11.2%	0.9%
Mecoprop	1988	9.6%	0.7%
Benfluralin	1382	6.7%	0.5%
Dicamba	624	3.0%	0.2%
INSECTICIDES:			
Chlorpyrifos	3454	22.3%	1.4%
Trichlorfon	3154	20.3%	1.3%
Carbaryl	2574	16.6%	1.1%
Bendiocarb	1933	12.5%	0.8%
Halofenozide	1509	9.7%	0.6%
Imidacloprid	1018	6.5%	0.4%
Dimethoate	1006	6.5%	0.4%
FUNGICIDES:			
Chlorothalonil	98111	49.4%	41.4%
Mancozeb	15766	7.9%	6.6%
Propamocarb HCl	15700	7.9%	6.6%
Iprodione	13884	7.0%	5.8%
Fosetyl-al	11804	5.9%	5.0%
Thiophanate/T-methyl	10789	5.4%	4.5%
Quintozene	8085	4.1%	3.4%
Thiram	5256	2.6%	2.2%
Vinclozolin	4928	2.5%	2.1%
Triadimefon	4767	2.4%	2.0%
GROWTH HORMONES:			
Ethephon	1170	58.4%	0.5%
Trinexapac-ethyl	533	26.6%	0.2%
Paclobutrazol	147	7.3%	0.1%

Table 3. Total pesticide amounts (in pounds active ingredient) applied to the various sites, 1999 golf course survey.

SITE	AMOUNT	% Total
Greens/Tees	159189	67%
Fairways	67830	29%
Rough	8418	3%
No site code	1409	1%

Table 4. Total pesticide amounts (in pounds active ingredient) by county, 1999 golf course survey.

COUNTY	# of Courses	Amount	% of Total
Atlantic	12	10128	4.3%
Bergen	20	21917	9.3%
Burlington	16	21069	8.9%
Camden	7	8363	3.5%
Cape May	6	5785	2.4%
Cumberland	2	580	0.2%
Essex	13	14046	5.9%
Gloucester	7	5030	2.1%
Hudson	0	0	0.0%
Hunterdon	5	6633	2.8%
Mercer	11	9247	3.9%
Middlesex	12	14155	6.0%
Monmouth	25	32940	13.9%
Morris	18	17646	7.5%
Ocean	11	6827	2.9%
Passaic	5	8897	3.8%
Salem	4	3284	1.4%
Somerset	16	22827	9.6%
Sussex	13	7935	3.4%
Union	9	16181	6.8%
Warren	6	3355	1.4%
	218	236844	100.0%