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

GOLF COURSE PESTICIDE USE IN NEW JERSEY – 1990 SURVEY

Towards the end of 1990 a golf course pesticide use survey was initiated by the NJDEP/Pesticide Control Program (PCP). The specific purpose of this project was to identify what chemicals and how much of each were used in 1990 on golf courses. A more general purpose of the survey was to supplement data gathered from previous pesticide use surveys for addressing the impact of pesticide use statewide.

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. These surveys almost represent a pesticide usage census rather than a probabilistic survey.

Surveys were mailed over a seven-month period 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 1990 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, 204 out of 219 (93%) surveys were received. Seven courses indicated no use or out of 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 1990 on golf courses, followed by thiram, mancozeb, and chlorthal-dimethyl.

Table 3 shows pesticide use by site. Fairways received the highest overall pesticide use.

Table 4 shows pesticide use by 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 1990 Golf Course Pesticide Use Survey.

HERBICIDES:

2,4-D	3342
Allidochlor	12
Amitrole	<1
Benfluralin	3764
Bensulide	6672
Bentazon	43
Bromoxynil	6
Calcium arsenate	33
Chlorsulfuron	162
Chlorthal-dimethyl	12793
Dicamba	780
Dichlobenil	14
Diquat	1
Dithiopyr	4
DSMA, MSMA	94
Ethofumesate	368
Fenoxaprop-ethyl	195
Glyphosate	581
Isoxaben	16
Mecoprop	6331
Oryzalin	184
Oxadiazon	948
Oxyfluorfen	21
Paraquat	2
Pendimethalin	2821
Picloram	<1
Prometon	<1
Sethoxydim	<1
Siduron	535
Trifluralin	482
TOTAL HERBICIDES:	40204

INSECTICIDES:

Acephate	17
Aspon	28
Bendiocarb	6071
Carbaryl	4115
Chlorpyrifos	5003
Cyfluthrin	<1
Diazinon	147
Dimethoate	1
Ethoprop	72
Fenamiphos	234
Fensulfothion	49
Fluvalinate	21
Isazofos	465
Isofenphos	6408
Methiocarb	39
Oil	112
Oxydemeton	2
Trichlorfon	8061
TOTAL INSECTICIDES:	30845

FUNGICIDES:

Anilazine	7052
Benomyl	3665
Chloroneb	418
Chlorothalonil	44670
Cycloheximide	166
Etridiazole	100
Fenarimol	566
Flutolanil	194
Flutriafol	2
Fosetyl-al	2502
Iprodione	10213
Mancozeb/Mb/Zb	13732
Mercurous Chloride	292
Metalaxyl	5758
PMA	287
Propamocarb HCl	7459
Propiconazole	2501
Quintozene	1929
Thiophanate	3178
Thiophanate-methyl	54
Thiram	15714
Triadimefon	6183
Vinclozolin	480
TOTAL FUNGICIDES:	127114

GROWTH HORMONES:

Dye (Aquashade)	6
Flurprimidol	650
Mefluidide	203
Paclobutrazol	79
TOTAL GR HORMONES:	938

TOTAL PESTICIDE USE: 199102

Herbicides:	20.2%
Insecticides:	15.5%
Fungicides:	63.8%
Growth Hormones:	0.5%

Table 2. Highest use compounds from the main pesticide categories, 1990 golf course survey. Shown are compounds >= 2% of class.

Compound	Lbs active ingredient	% of class	% of total use
HERBICIDES:			
Chlorthal-dimethyl	12793	31.8%	6.4%
Bensulide	6672	16.6%	3.4%
Mecoprop	6331	15.7%	3.2%
Benfluralin	3764	9.4%	1.9%
2,4-D	3342	8.3%	1.7%
Pendimethalin	2821	7.0%	1.4%
Oxadiazon	948	2.4%	0.5%
INSECTICIDES:			
Trichlorfon	8061	26.1%	4.0%
Isofenphos	6408	20.8%	3.2%
Bendiocarb	6071	19.7%	3.0%
Chlorpyrifos	5003	16.2%	2.5%
Carbaryl	4115	13.3%	2.1%
FUNGICIDES:			
Chlorothalonil	44670	35.1%	22.4%
Thiram	15714	12.4%	7.9%
Mancozeb	13732	10.8%	6.9%
Iprodione	10213	8.0%	5.1%
Propamocarb HCl	7459	5.9%	3.7%
Anilazine	7052	5.5%	3.5%
Triadimefon	6183	4.9%	3.1%
Metalaxyl	5758	4.5%	2.9%
Benomyl	3665	2.9%	1.8%
Thiophanate	3178	2.5%	1.6%
Fosetyl-al	2502	2.0%	1.3%
Propiconazole	2501	2.0%	1.3%
GROWTH HORMONES:			
Flurprimidol	650	69.3%	0.3%
Mefluidide	203	21.6%	0.1%
Paclobutrazol	79	8.4%	<0.1%

Table 3. Total pesticide amounts (in pounds active ingredient) applied to golf course sites, 1990 golf course survey.

SITE	AMOUNT	% Total
Greens/Tees	60892	31%
Fairways	103697	52%
Rough	14363	7%
No site code	20149	10%

Table 4. Total pesticide amounts (in pounds active ingredient) by county, 1990 golf course survey.

COUNTY	# of Courses	Amount	% of Total
Atlantic	10	5103	2.6%
Bergen	23	25334	12.7%
Burlington	15	13851	7.0%
Camden	7	6327	3.2%
Cape May	4	2269	1.2%
Cumberland	2	415	0.2%
Essex	14	21686	10.9%
Gloucester	5	2601	1.3%
Hudson	0	0	0.0%
Hunterdon	4	4843	2.4%
Mercer	9	7812	3.9%
Middlesex	11	12369	6.2%
Monmouth	21	22522	11.3%
Morris	18	14640	7.3%
Ocean	10	8437	4.2%
Passaic	5	6420	3.2%
Salem	4	1386	0.7%
Somerset	13	14944	7.5%
Sussex	7	3578	1.8%
Union	11	23505	11.8%
Warren	4	1059	0.5%
	197	199102	100.0%