

PESTICIDE USE IN NEW JERSEY

An Analysis of Pesticide Use by Peach Growers Participating in the Rutgers Cooperative Extension Tree Fruit IPM Program During 1992

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Introduction

Peaches are of major importance to agriculture in New Jersey. During the 1988 growing season, tree fruit production ranked number three in terms of total production (New Jersey Department of Agriculture, 1988) (ca. 101,000,000 tons, respectively) for the 3 major crop groups (field crops, tree fruit and vegetables) grown in New Jersey. Within this group of crops, peaches ranked number one in total cash receipts in 1988 (ca. \$19,524,000.00). Similarly, these levels continue today.

In light of peach's value as a crops in New Jersey, the use of pesticides is correspondingly high (ca. 536,983lbs. of formulated product in 1988) (Hamilton and Meyer, 1992). This use of pesticides is limited mainly to fungicides and insecticides. These materials are normally used throughout the season because of numerous pests attacking peaches in New Jersey. They are applied as protective measures early in the year and to put out fires late in the growing season. Both forms of application are necessary on the part of the grower to provide protection from loss of yield and to prevent cosmetic damage to the fruit. The use of these materials in an IPM program may be drastically different. This program promotes the use of pesticides only when necessary and relies on alternative control methods when available.

Prior to 1986, efforts to collect such data were conducted by the New Jersey State Department of Health (DOH) (New Jersey Department of Health, 1979). These surveys at best were minimal. To correct this situation, in 1986, the New Jersey Department of Environmental Protection (DEP), Pesticide Control Program and Rutgers Cooperative Extension (RCE) conducted a mail-in survey of all certified private applicators in New Jersey. This survey was conducted under the auspices of New Jersey's Pesticide Control Act (DEP, 1986) which requires private applicators (i.e., growers) to keep records of all pesticide applications and to submit these records to DEP upon request. The survey conducted requested growers to list all applications by brand name and formulation, amount applied, number of applications, acreage treated and the crop(s) treated.

This survey was highly successful resulting in a 90%+ return rate and covered data for approximately 75% of New Jersey's farming operations (Louis, et. al., 1989). Results of the survey included a total use of 500,000 lbs. of active ingredient in peaches. Due to the successful nature of the original survey, New Jersey growers were resurveyed during 1989. The results of this survey were similar to those found in 1986 (Hamilton and Meyer, 1992).

Unfortunately, these surveys did not collect data regarding the pests controlled, acreage planted, etc. The New Jersey Department of Agriculture (DA) does conduct surveys of crop acreage and yield estimates for major crops in New Jersey on a yearly basis. The results of this survey, however, are published two years following collection.

The lack of this type of integrated data is further compounded by the fact that over 513 pesticide products (109 individual active ingredients) are registered for use on peaches in New Jersey. Many of these products can be used to control the same pests. This fact makes it difficult to determine which pests are being controlled with a particular pesticide.

Given the high amount of pesticides used in peach production, it is important to have accurate estimates of the total amount of different materials used. These estimates are necessary because of the growing concern over groundwater contamination, food safety, etc. Accurate data is also essential in light of United States Environmental Protection Agency (EPA) concerns about materials such as captan, 2,4-D and chlorpyrifos, etc., all of which are labeled for use on peaches.

By surveying growers participating in the IPM programs the subtle differences between standard production practices and those used in an IPM program can be detected. Such differences need to be identified and are very valuable in terms of USDA benefit assessments.

For these reasons, it was the objective of this project to obtain data pertaining to the use of pesticides on peaches grown under IPM techniques during 1992.

Procedures

All data collected as part of this project were obtained under the auspices of the Rutgers Cooperative Extension Tree Fruit IPM Program. The data collection timetable for this project was from April through October of 1991.

At the beginning of the growing season, all growers participating in the 1992 Tree Fruit IPM program were asked to provide data on the number of peach acres which would be included in the program. Using this information, a sampling schedule was developed for each farm. Initiation of the sampling schedule was dependent on which geographic region of the state an individual farm was located.

Once initiated, each farm was visited on a weekly basis by an IPM scout trained in pest identification. During each inspection, data was collected for the following peach pests:

<u>Pest</u>	<u>Sample Method</u>
Oriental fruit moth	pheromone traps, Number of infested terminals
European red Mites	leaf samples
green peach aphid	number of colonies
tarnished plant bug	sweep and beating tray samples, number of damaged fruit
tufted apple budmoth	pheromone traps, number of damaged fruit
lesser peach tree borer	pheromone traps, pupal case counts
peach tree borer	pheromone traps
plum curculio	beating tray samples, damaged fruit
Japanese beetle	number of damaged fruit
brown rot	number of infected fruit
bacterial spot – fruit	number of infected fruit
bacterial spot – foliar	number of infected leaves
leaf curl	percent infected terminals
fusicoccum canker	percent infected terminals
cytospora canker	number of cankers present

On the basis of these evaluations, recommendations were made as to the need for an application of fungicides, bactericides, insecticides and acaricides. The selection of pesticide based on the data obtained was the responsibility of each individual grower. Since herbicide recommendations are not normally part of the services provided by the IPM program, their use was not included in this study.

At the end of the growing season, inspecting each grower's application records collected data pertaining to pesticide application. The data collected included:

1. date of application
2. method of application
3. type of application
4. material used
5. rate used
6. total acreage sprayed

On the basis of this information, data on the total amount of material and active ingredient were developed. Cost data was also developed using the data collected. All data collected were computerized and analyzed using DBASE III+ and SAS statistical package software.

Results

Forty growers enrolled 2,453.84 acres of peaches in the Rutgers Cooperative Extension Peach IPM program during 1992 (Table 1). For the growers enrolled, most were from Gloucester County (15 growers), followed by Hunterdon County (five growers), and Camden County (four growers). Atlantic County, Morris County, and Warren County all had three growers enrolled. The highest number of county wide acres enrolled was also from Gloucester County (1,378.74 acres), followed by Cumberland County (375.90 acres), Burlington County (228.80 acres), and Camden County (224.00 acres). On an individual basis, the grower with most acres enrolled was from Cumberland County (276.80 acres). The grower with the second highest number of acres enrolled was from Burlington County. Overall, the IPM program scouted an average of 61.35 acres per grower in 1992.

Table 1. Peach acreage enrolled in the Rutgers Cooperative Extension peach IPM program during 1992.

Grower Code	County	Planted Acreage	County Total
20	Atlantic	16.00	
27	Atlantic	20.00	
30	Atlantic	85.00	121.00
9	Bergen	25.00	25.00
16	Burlington	80.00	
29	Burlington	148.80	228.80
22	Camden	10.00	
24	Camden	4.00	
31	Camden	110.00	
36	Camden	100.00	224.00
14	Cumberland	99.10	
26	Cumberland	276.80	375.90
15	Gloucester	70.00	
17	Gloucester	120.00	
18	Gloucester	77.74	
19	Gloucester	273.00	
21	Gloucester	80.00	
25	Gloucester	10.00	
28	Gloucester	60.00	
32	Gloucester	100.00	
33	Gloucester	13.80	
34	Gloucester	70.00	
35	Gloucester	110.20	
37	Gloucester	14.00	
38	Gloucester	40.00	
39	Gloucester	240.00	
40	Gloucester	100.00	1,378.74
1	Hunterdon	6.00	
4	Hunterdon	12.00	
11	Hunterdon	4.00	
12	Hunterdon	20.00	
13	Hunterdon	10.00	52.00
5	Monmouth	10.00	10.00
3	Morris	4.00	
7	Morris	3.00	
10	Morris	6.00	13.00
23	Salem	2.40	2.40
2	Warren	10.00	

6	Warren	10.00	
8	Warren	3.00	23.00
Total			2,453.84

During 1992, a total of 82,210.01 acres of peaches were treated with pesticides (Table 2). At first glance, this appears to be a large number of acres. However, it represents multiple applications to the same acreage. Given this, it can be assumed that all of the acreage enrolled in the program was treated at least once during the growing season. As was the case for the number of acres enrolled, Gloucester County also had the highest number of treated acres (52,512.49 acres). Cumberland County (16,083.82 acres), Camden County (6,563.77 acres), Burlington County (5,546.40 acres), and Atlantic County (3,227.55 acres) followed Gloucester County in terms of the number of total acres treated. On average, growers treated 2,055 acres apiece during 1992. In addition, the average number of acres treated per application ranged from 2.04 acres per treatment by grower 23 in Salem County to 189.71 acres per treatment by grower 19 in Gloucester County.

Table 2. Number of IPM grown acres treated with pesticides during 1992.

Grower Code	County	Total Acreage Treated per Grower	Total Acres Treated per County	Average Number of Acres Treated per Application
20	Atlantic	557.55		7.34
27	Atlantic	520.00		17.93
30	Atlantic	2,150.00	3,227.55	35.25
9	Bergen	288.60	288.60	18.04
15	Burlington	790.00		2.50
29	Burlington	4,756.40	5,546.40	12.42
22	Camden	2,775.17		32.27
24	Camden	188.00		4.00
31	Camden	2,000.00		29.85
36	Camden	1,600.60	6,563.77	32.67
18	Cumberland	4,702.42		79.70
26	Cumberland	6,940.00		61.96
35	Cumberland	4,441.40	16,083.82	8.03
1	Hunterdon	96.00		6.00
4	Hunterdon	198.00		8.25
11	Hunterdon	42.67		3.28
12	Hunterdon	173.50		13.35
13	Hunterdon	78.00	588.17	7.80
16	Gloucester	2,180.00		32.54
17	Gloucester	3,305.00		36.72
19	Gloucester	14,987.27		189.71
21	Gloucester	1,977.50		24.72
25	Gloucester	147.50		5.67
28	Gloucester	771.25		20.84
32	Gloucester	9,386.09		128.58
33	Gloucester	480.50		4.49
34	Gloucester	2,750.00		25.46
37	Gloucester	417.38		5.88
39	Gloucester	4,120.00		111.35
40	Gloucester	11,990.00	52,512.49	64.46
5	Monmouth	105.00	105.00	6.18
3	Morris	32.00		4.00
7	Morris	30.00		3.00
10	Morris	33.00	95.00	5.50

23	Salem	155.10	155.10	2.04
2	Warren	89.00		7.42
6	Warren	160.00		10.00
8	Warren	22.67	271.67	2.27

Total 82,210.01

The amount of material used during 1992 in terms of active ingredient applied was highest in Gloucester County (126,938.42 lbs. AI) (Table 3). This level was followed by Cumberland County (23,350.99 lbs. AI) and Camden County (21,888.45 lbs. AI). Burlington County (13,196.03 lbs. AI) ranked fourth during 1992, followed by Atlantic County (9,710.58 lbs. AI). All other counties reported use levels of less than 1,000 lbs. AI. Gloucester County also reported the highest application rates per grower of all counties reporting. Overall, mean amounts of AI applied per application ranged from between 2.92 lbs. AI (Salem County) to 320.73 lbs. AI (Gloucester County).

Table 3. Amount of active ingredient applied to IPM grown peaches during 1992.

Grower Code	County	Total lbs. AI Applied per Grower	Total lbs. AI Applied per County	Mean lbs. AI Applied per Application
20	Atlantic	1,243.08		16.36
27	Atlantic	549.30		18.94
30	Atlantic	7,918.20	9,710.58	129.81
9	Bergen	661.67	661.67	41.35
15	Burlington	2,035.45		6.44
29	Burlington	11,160.58	13,196.03	29.14
22	Camden	6,115.85		71.11
24	Camden	190.00		4.04
31	Camden	9,467.55		141.31
36	Camden	6,115.05	21,888.45	124.80
18	Cumberland	6,290.63		106.62
26	Cumberland	8,364.10		74.68
35	Cumberland	8,696.26	23,350.99	15.73
1	Hunterdon	334.80		20.93
4	Hunterdon	812.66		33.86
11	Hunterdon	126.26		9.71
12	Hunterdon	926.03		71.23
13	Hunterdon	469.30	2,669.05	46.93
16	Gloucester	6,872.20		102.57
17	Gloucester	7,122.15		79.14
19	Gloucester	22,286.45		282.11
21	Gloucester	4,440.35		55.50
25	Gloucester	644.00		24.77
28	Gloucester	895.44		24.20
32	Gloucester	21,886.18		299.81
33	Gloucester	850.44		7.95
34	Gloucester	8,042.70		74.47
37	Gloucester	1,589.96		22.39
39	Gloucester	11,867.05		320.73
40	Gloucester	40,441.50	126,938.42	217.43
23	Salem	222.12	222.12	2.92
5	Monmouth	315.50	315.50	18.56
3	Morris	105.48		13.19
7	Morris	198.27		19.83

10	Morris	208.20	511.95	34.70
2	Warren	245.28		20.44
6	Warren	540.50		33.78
8	Warren	62.50	848.28	6.25
Total		190,602.46		

Examination of the data by the type of material applied revealed fungicides (46,199.20 acres) to be the most applied materials based on total treated acres (Table 4). Second to fungicide use was the use of insecticides (23,064.64 acres). Third was the use of bactericides (15,460.04 acres). When these data were examined on a county basis more acreage was treated with fungicides in Gloucester County (28,040.96 acres) than in any other county. This trend also held true for insecticides (14,179.45 acres) and bactericides (10,289.57 acres). Similar trends, though lower in acreage, were seen in Cumberland, Camden, and Burlington County.

Table 4. Total treated acreage by county and type of pesticide applied.

County	Acres Treated			
	Bactericides	Fungicides	Insecticides	Acaricides
Atlantic	554.75	1,534.85	1,137.95	0.00
Bergen	0.00	578.00	322.00	0.00
Burlington	648.80	2,945.98	1,931.63	20.00
Camden	761.54	3,557.13	2,149.50	95.00
Cumberland	3,320.38	9,223.98	3,487.36	52.10
Hunterdon	280.00	1,085.50	475.00	0.00
Gloucester	10,289.57	28,040.96	14,179.45	2.50
Monmouth	95.00	170.00	160.00	0.00
Morris	8.00	116.00	94.00	4.00
Salem	31.75	83.65	39.70	0.00
Warren	25.00	398.00	226.00	0.00
Total	15,460.04	46,199.20	23,064.64	173.60

Table 5 also shows fungicides to be the most applied materials based on total amounts applied. During 1992 173,397.37 lbs. AI were applied. Of this amount, 69% or 119,102.53 lbs. AI were applied in Gloucester County, 12% or 21,053.48 lbs. AI in Cumberland County, and 11% or 18,564.23 lbs. AI in Camden County. Overall, insecticides ranked second behind fungicides. Fifty-four percent or 5,401.67 lbs. AI was applied in Gloucester County and 15% or 1,457.89 lbs. AI in Cumberland County. Gloucester County also ranked number one in terms of bactericide use with 40% of all the material applied (2,432.52 lbs. AI). Second to Gloucester County was Camden County with 2,314.41 lbs. AI applied (38%).

Table 5. Total amount of active ingredient applied by county and type of pesticide applied.

County	Total Amount of AI Applied			
	Bactericides	Fungicides	Insecticides	Acaricides
Atlantic	154.15	8,978.17	578.27	0.00
Bergen	0.00	578.00	322.00	0.00
Burlington	207.28	12,128.60	795.58	64.58
Camden	2,314.41	18,564.23	985.02	24.80

Cumberland	748.44	21,053.48	1,457.89	91.18
Hunterdon	280.00	1,085.50	475.00	0.00
Gloucester	2,432.52	119,102.53	5,401.67	1.70
Monmouth	95.00	170.00	160.00	0.00
Morris	8.00	116.00	94.00	4.00
Salem	6.43	201.03	14.67	0.00
Warren	25.00	398.00	226.00	0.00
Total	6,117.09	173,397.37	9,931.82	186.25

When the data was examined individually by active ingredients applied, the most applied material in terms of treated acres was the fungicide sulfur (21,769.54 acres) (Table 6). Sulfur was also the most applied material overall in terms of the amount of active ingredient applied (163,340.91 lbs. AI). Second to sulfur in terms of acres treated was the bactericide Copper (14,498.20 acres). In terms of lbs. AI applied, however, the fungicide captan was the second most applied material (15,030.42 lbs. AI). Other high use fungicides included thiophanate methyl (3,978.13 acres; 41,713.35 lbs. AI), myclobutanil (3,099.45 acres; 145.27 lbs. AI), triforine (2,387.44 acres; 495.28 lbs. AI), iprodione (2,773.75 acres; 1,399.50 lbs. AI), and benomyl (1,703.79 acres; 479.93 lbs. AI). High use insecticides included azinphos methyl (11,720.95 acres; 4,869.48 lbs. AI), methyl parathion (8,294.48 acres; 3,017.44 lbs. AI) methomyl (1,176.46 acres; 456.46 lbs. AI) and phosmet (1,011.26 acres; 943.18 lbs. AI). The most applied acaricide was propargite (73.60 acres; 167.65 lbs. AI).

Table 6. Total treated acreage and amounts of active ingredient applied for individual active ingredients.

Type of Pesticide	Active Ingredient	Acres Treated	lbs. AI Applied
Bactericides	Copper	14,498.20	5,687.87
	Terramycin	1,516.60	247.72
Fungicides	Benomyl	1,703.79	479.93
	Captan	10,764.46	15,030.42
	Chlorothalonil	890.43	1,110.63
	Dichlone	35.50	12.29
	Dodine	90.00	97.20
	Fenarimol	4.00	0.20
	Ferbam	3.00	9.48
	Iprodione	2,773.75	1,399.50
	Myclobutanil	3,099.45	145.27
	Sulfur	21,769.54	163,340.91
	Thiophanate methyl	3,978.13	1,713.35
	Triadimefon	16.50	0.99
	Triforine	2,387.44	495.28
Vinclozolin	218.07	169.24	
Insecticides	Azinphos methyl	11,720.95	4,869.48
	Carbaryl	214.25	227.33
	Chlorpyrifos	6.00	18.00
	Endosulfan	168.18	119.80
	Esfenvalerate	881.30	24.62
	Ethyl parathion	375.53	182.00
	Formetanate	71.00	32.12
	Malathion	89.22	79.17
	Methomyl	1,176.43	456.46
	Methyl parathion	8,294.48	3,017.44

	Mevinphos	50.00	32.50
	Oil	49.00	156.00
	Permethrin	110.00	18.00
	Phosmet	1,011.26	943.18
Acaricides	Clofentizene	80.00	15.20
	Dicofol	2.50	2.10
	Fenbutatin Oxide	2.50	1.70
	Propargite	73.60	167.65

Table 7 shows the application costs on a per grower and county basis. Overall, growers enrolled in the peach IPM program spent \$36,761,668 pest control. The amount spent per grower ranged from as little as \$285.78 to as much as \$64,159.50. Total application costs were highest in Gloucester County (\$196,584.73) followed by Cumberland County (\$74,911.20), Burlington County (\$27,320.80), and Camden County (\$26,948.20). On a per grower basis the total cost per acre for pest control ranged between \$48.12 and \$641.60 per acre. Also, the per grower costs on a per treatment basis ranged between \$25.98 and \$2,376.28 per treatment.

Table 7. Application costs by grower and county during 1992.

Grower Code	County	Total Cost (\$)		Cost per Acre (\$)	Cost per Treatment (\$)
		Grower	County		
20	Atlantic	3229.4		201.84	134.56
27	Atlantic	3845.1		192.26	384.51
30	Atlantic	9960.1	17034.60	117.18	474.29
9	Bergen	5,458.65	5,458.65	218.35	496.24
15	Burlington	3,526.50		50.38	88.16
29	Burlington	23,794.30	27,320.80	159.91	339.92
22	Camden	1,527.80		152.78	80.41
24	Camden	1,391.50		347.88	81.85
31	Camden	17,216.40		156.51	662.17
36	Camden	6,812.50	26,948.20	68.13	400.74
18	Cumberland	10,061.10		129.42	503.06
26	Cumberland	40,349.10		224.16	1,494.41
35	Cumberland	24,501.00	74,911.20	222.33	395.18
16	Gloucester	12,010.30		145.05	461.93
17	Gloucester	14,323.50		119.36	434.05
19	Gloucester	44,739.20		163.88	1,398.10
21	Gloucester	8,748.90		109.36	460.47
25	Gloucester	996.70		99.67	90.61
28	Gloucester	6,957.33		115.96	386.52
32	Gloucester	64,159.50		641.60	2,376.28
33	Gloucester	1,782.80		129.19	52.44
34	Gloucester	8,789.70		125.57	292.99
37	Gloucester	1,999.90		142.85	74.07
39	Gloucester	27,265.00		113.60	1,817.67
40	Gloucester	4,811.90	196,584.73	48.12	141.53
1	Hunterdon	3,366.25		561.04	210.39
4	Hunterdon	3,742.58		311.88	178.22
11	Hunterdon	692.51		173.13	53.27
12	Hunterdon	2,417.32		120.87	185.95
13	Hunterdon	512.01	10,730.67	51.20	51.20

5	Monmouth	2,135.35	2,135.35	213.54	125.61
3	Morris	793.28		198.32	99.16
7	Morris	778.46		259.49	77.85
10	Morris	497.70	2,069.44	82.95	82.95
23	Salem	883.50	883.50	368.13	42.07
2	Warren	839.56		83.96	69.96
6	Warren	2,414.20		241.42	150.89
8	Warren	285.78	3,539.54	95.26	25.98

Examination of the cost data based on the type of material applied and showed that more money was spent on fungicides (\$262,270.13) than any other grouping (Table 8). This was followed by insecticide costs (\$115,200.13) and bactericide costs (\$23,788.31). As would be expected, the county with the highest fungicide costs was Gloucester County (\$160,227.10) followed by Cumberland County (\$51,056.60), Camden County (\$19,579.40), and Burlington County (\$16,787.00). Gloucester County also had the highest insecticide (\$70,611.70) and bactericide (\$9,347.30) costs. For insecticides Cumberland County ranked second followed Camden County and Burlington County. For bactericides Camden County ranked second followed by Cumberland County and Hunterdon County.

Table 8. Total county costs by the type of pesticide applied.

County	Cost (\$)			
	Bactericides	Fungicides	Insecticides	Acaricides
Atlantic	583.80	9,585.10	6,865.70	0.00
Bergen	0.00	3,770.15	1,688.50	0.00
Burlington	1,022.40	16,787.00	8,715.40	796.00
Camden	6,531.50	19,579.40	11,386.50	3,198.80
Cumberland	4,398.70	51,056.60	17,111.50	2,344.40
Gloucester	9,374.30	160,227.10	70,611.70	41.63
Hunterdon	1,946.00	5,987.50	2,797.17	0.00
Monmouth	296.81	1,009.04	829.50	0.00
Morris	55.60	973.68	680.16	360.00
Salem	108.80	596.40	178.30	0.00
Warren	54.20	2,283.94	1,201.40	0.00
Total	23,788.31	262,270.81	115,200.13	6,740.83

Table 9 reveals the total costs per acre on a county and type of material applied basis. Fungicides again ranked number one followed by insecticides and bactericides. Gloucester County ranked number one for fungicides and insecticides but was replaced by bactericides in Cumberland County. The county with the second highest per acre costs was Cumberland County for fungicides, Burlington County for insecticides, and Camden County for bactericides.

Table 9. Total county cost per acre costs by the type of pesticide applied.

County	Cost per Acre (\$)			
	Bactericides	Fungicides	Insecticides	Acaricides
Atlantic	42.57	643.49	299.77	0.00
Bergen	0.00	251.43	78.68	0.00
Burlington	220.77	1,877.26	1,187.66	205.28
Camden	274.09	1,011.30	364.70	93.25
Cumberland	377.35	2,580.12	757.12	179.99

Gloucester	260.40	3,548.14	1,311.13	16.65
Hunterdon	180.70	913.89	393.48	0.00
Monmouth	44.03	189.73	127.36	0.00
Morris	13.90	286.16	161.60	90.00
Salem	57.04	334.28	83.34	0.00
Warren	6.50	314.85	164.36	0.00
Total	1,434.79	11,307.16	4,629.42	585.17

Table 10 shows the total costs and per acre cost breakdown for the individual materials applied. Overall, more money was spent on captan (Total cost - \$\$64,772.86; Cost per acre - \$3,159.80) use than any other material. Second to captan was the insecticide azinphos methyl, followed by the fungicides iprodione and sulfur. Other notable costs were for the application of the insecticide methyl parathion and the fungicide triforine.

Table 10. Application costs for individual active ingredients during 1992.

Type of Pesticide	Active Ingredient	Total Cost (\$)	Cost per Acre
<i>Bactericides</i>	Copper	12,494.78	423.66
	Terramycin	11,877.33	1,053.68
<i>Fungicides</i>	Benomyl	14,233.42	892.15
	Captan	64,772.86	3,159.80
	Chlorothalonil	7,110.34	225.31
	Dichlone	174.66	16.80
	Dodine	1,200.00	40.00
	Fenarimol	51.75	12.94
	Ferbam	17.40	5.80
	Iprodione	53,012.30	2,523.03
	Myclobutanil	12,592.00	419.35
	Sulfur	50,040.90	1,700.88
	Thiophanate methyl	39,377.06	1,376.63
	Triadimefon	98.40	11.93
	Triforine	22,336.72	1,259.80
Vinclozolin	6,838.10	306.26	
<i>Insecticides</i>	Azinphos methyl	60,962.35	2,370.93
	Carbaryl	1,186.05	151.25
	Chlorpyrifos	190.08	31.68

	Endosulfan	1,250.20	77.05
	Esfenvalerate	9,870.10	128.15
	Ethyl parathion	709.84	59.38
	Formetanate	955.80	65.35
	Malathion	476.40	110.60
	Methomyl	8,682.20	421.77
	Methyl parathion	30,087.00	934.54
	Mevinphos	321.00	19.75
	Oil	461.76	72.52
	Permethrin	904.15	21.83
	Phosmet	6,327.70	485.65
<i>Acaricides</i>	Clofentizene	2,880.00	72.00
	Dicofol	45.90	18.36
	Fenbutatin Oxide	41.63	16.65
	Propargite	3,454.50	456.91

Summary

During 1992, 40 growers applied over 190,000 lbs. of active ingredient to over 82,000 acres planted in peaches. The bulk of the materials applied were fungicides, however, significant amounts of insecticides and bactericides were also applied. When the data were examined on a county by county basis, the majority of the pesticides applied were done so in Gloucester, Cumberland and Camden Counties. The most applied fungicide was sulfur followed by captan, thiophanate methyl, and myclobutanil. Azinphos methyl was the most applied insecticide followed by methyl parathion and methomyl.

The cost of these applications was significant with over 36 million dollars being spent. The bulk of this cost was in Gloucester County followed by Cumberland County, Burlington County and Camden County. The range for individual growers ranged between \$48.12 and \$641.60 per acre and between \$25.98 and \$2,376.28 per treatment. Overall, the bulk of the money was spent on fungicides with the highest amount spent of the application of captan. For insecticides, azinphos methyl ranked first in total amount spent. Methyl parathion and triforine also ranked high in total costs of application.

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