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1979 Pesticide Use on Vegetables in Five Regions

Walter L. Ferguson

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ABSTRACT

According to a 1979 Vegetable Pesticide Survey, approximately 16 million pounds of pesticides (excluding mineral spirits) were used to control weeds, insects, diseases, and nematodes on 12 vegetable crops in five regions which included 18 States. The five regions are Northeast (NY, NJ), Southeast (NC, SC, GA, FL), Midwest (IL, IN, MI, MN, OH, WI), Northwest (ID, OR, WA), and Southwest (AZ, CO, TX). The 12 vegetable crops include cabbage, cantaloups, carrots, celery, cucumbers, green peas, lettuce, onions, snap beans, sweet corn, tomatoes, and watermelons. Approximately 11.5 million acre-treatments were made ranging from a low of 137,500 treatments on 126,300 acres of cucumbers to a high of 3.2 million treatments on 555,900 acres of sweet corn.

Keywords: Pesticides, herbicides, fungicides, insecticides, nematicides, active ingredient, tank-mixtures, acres treated, acre-treatments, application rate.

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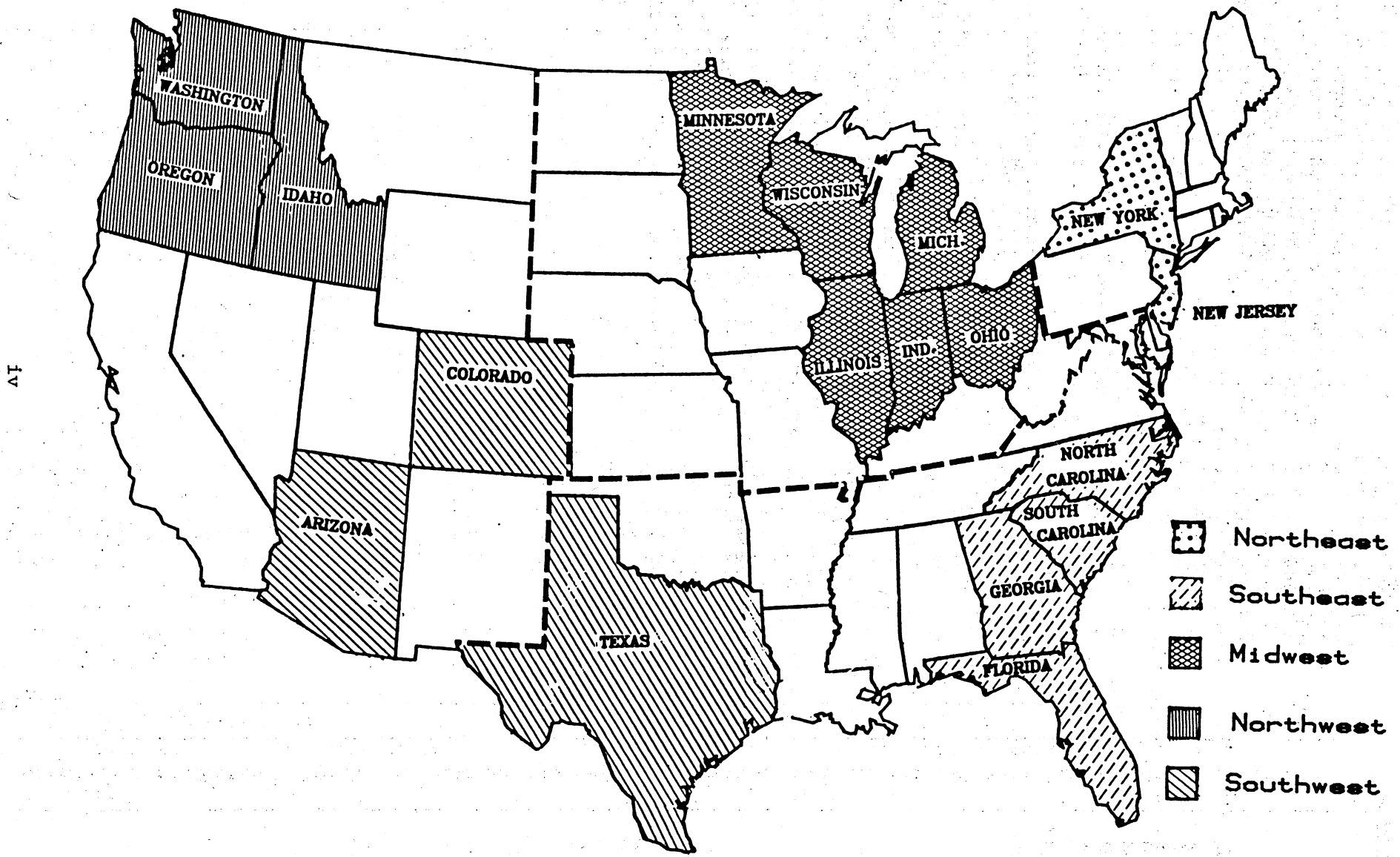
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- Northeast: Jerry Heath of New York; and John A. Meade, Stewart E. Race, and John K. Springer of New Jersey.
- Southeast: George G. Kennedy, Thomas J. Monaco, and Paul B. Shoemaker of North Carolina; Charles E. Drye, Dan O. Ezel, and Randall P. Griffen of South Carolina; J. Dan Gay, James F. Miller, and A. Leon Stacy of Georgia; and Fred A. Johnson, Thomas A. Kucharek, Amedga J. Overman, Walter T. Scudder, James R. Shumaker, Gary W. Simone, and William M. Stall of Florida.
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Figure 1. States included in the 1979 Vegetable Pesticide Survey



PREFACE

This report is a summary of six preliminary reports based on a 1979 Vegetable Pesticide Survey conducted by the Statistical Reporting Service. These regional reports contain pesticide use patterns on 12 vegetable crops in 18 States. Data reported includes acres treated, acre-treatments, times applied, and quantity used. Authors and coauthors included Ted Kuntz, Shwu-Eng Webb, Iris McCalla, and Walter Ferguson. The preliminary reports are:

1. 1979 Pesticide Use on Vegetables in the Northeast, A Preliminary Report, December 1981, PB82-162322.
2. 1979 Pesticide Use on Vegetables in the Southeast, A Preliminary Report, October 1981, PB82-156241.
3. 1979 Pesticide Use on Florida Vegetables, A Preliminary Report, July 1981, PB81-25227.
4. 1979 Pesticide Use on Vegetables in the Midwest, A Preliminary Report, December 1981, PB83-204040.
5. 1979 Pesticide Use on Vegetables in the Northwest, A Preliminary Report, March 1982, PB82-201443.
6. 1979 Pesticide Use on Vegetables in the Southwest, A Preliminary Report, December 1981, PB82-166885.

Copies of each of the above reports (paper, \$8.50; microfiche, \$4.50) can be purchased from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. Request each report by title and PB number and send check or money order payable to NTIS. For more information, call NTIS order desk (703) 487-4650.

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1979 Pesticide Use on Vegetables in Five Regions

Walter L. Ferguson

INTRODUCTION

In this report, 1979 pesticide use patterns are presented for 12 vegetable crops in five regions which include 18 States. Pesticide use patterns are discussed for cabbage, cantaloups, carrots, celery, cucumbers, green peas, lettuce, onions, snap beans, sweet corn, tomatoes, and watermelons. Survey data were collected on quantities of pesticides used, acres treated, acre-treatments, number of applications, seasonal rates, and rate per acre-treatment. This report provides information useful to policymakers, researchers, extension specialists, and industry personnel. Because vegetables are highly susceptible to weeds, insects, diseases, and other pest damage, there is a continuing need for pesticide use information. Regulations on the use of pesticides and review of registrations by the Environmental Protection Agency also create the need for accurate, detailed information for economic studies of pesticide use.

A major factor affecting the quantity of pesticide use is the number of acres planted. For most of the 12 vegetable crops, the number of acres planted in 1979 closely approximates the average acreage planted for 1978-80 (Table 1). A difference of about 3 percent is indicated for the 12-crop total, 1.91 million acres in 1979 versus 1.85 million for the 3-year average. The decrease in planted acreage in 1980 for cucumbers, cantaloups, and watermelons reflects growers' response to higher prices for soybeans and other substitute crops. Overall, 1979 could be described as a typical year for acreage of vegetables planted. The number of planted acres, however, is only one of several factors affecting pesticide usage. Weather conditions, pest infestations, and pest resistance affect pesticide rates and the number of applications per season.

Planted acreage for the 12 crops surveyed in 1979 ranged from nearly 556,000 acres for sweet corn to about 15,000 acres for celery. Whether these vegetables are sold in the fresh market or the processing market, the appearance of the product has a considerable impact on market price. Thus, for these fresh market and processing crops, pesticides are especially important.

Table 1. Acres planted in 1979 compared with 1978-80 average,
12 vegetables, 5 regions a/

Crop	Fresh market			Processing market			Fresh and processing markets	
	1978	1979	1980	1978	1979	1980	1979	3-year average
	----- 1,000 acres -----							
Cabbage	78.5	80.3	78.0	9.2	8.5	8.1	88.8	87.5
Cantaloups	43.5	40.9	36.4	-	-	-	40.9	40.3
Carrots <u>b/</u>	-	-	-	-	-	-	46.1	43.1
Celery	15.4	15.4	17.1	-	-	-	15.4	16.0
Cucumbers	30.6	29.0	20.3	97.2	97.3	84.4	126.3	119.6
Green peas	-	-	-	325.8	344.5	294.8	344.5	321.7
Lettuce	78.3	84.6	79.4	-	-	-	84.6	80.9
Onions <u>b/</u>	-	-	-	-	-	-	87.7	85.5
Snap beans	34.6	35.4	38.9	205.5	211.2	196.9	246.6	240.8
Sweet corn	142.2	137.8	135.6	431.1	418.1	376.4	555.9	547.1
Tomatoes	80.9	77.2	78.4	47.2	47.1	40.8	124.3	123.9
Watermelons	180.8	166.3	147.8	-	-	-	166.3	165.0
Total							1,927.4	1,871.4

a/ Vegetables, 1980 Annual Summary, ESS, USDA, Vg 1-2(80), December 1980.

b/ Acres planted data not available for individual markets in some regions.

METHODOLOGY

A random sample design was used to select growers. Data were expanded for individual farms in the survey to reflect all farms by multiplying the sample data by the inverse of the sample ratio for the stratum. The pesticide use data for each crop were then adjusted by the ratio of the number of acres grown in the State to the number of expanded sample acres for each crop grown.

INTERPRETING THE DATA

Pesticides are grouped into the following categories: (1) herbicides (used to kill plants or inhibit their growth), (2) insecticides (used to kill or inhibit insects), (3) fungicides (used to control diseases by killing or inhibiting fungi), and (4) nematocides (used to kill or inhibit nematodes and other organisms in the soil).

The term "acres treated" is used to identify acres receiving one or more applications of a specific pesticide. Acres treated are not additive because two or more different specific ingredients may have been used on the same acre. Therefore, sums of acres treated are not shown in Tables 5 through 19 as summing them could result in double counting.

"Acre-treatments" are the number of acres treated one time by a specific pesticide. The number of applications per season was derived by dividing the acre-treatments by the acres treated for each specific pesticide material.

Single application and annual rates are estimated for specific active ingredients. Annual rates include the average rate for all seasons. The single application rate is derived by dividing the total active ingredients of a specific pesticide by the number of acre-treatments; the annual rate is derived by dividing the total active ingredients by the number of acres treated.

Acres treated and acre-treatments for Bacillus thuringiensis, a bacteria, are included in the insecticide category. The rates and quantities applied are not reported because application rates are expressed in terms of spores per gram rather than in pounds of active ingredient.

The rate per application and number of applications for specific pesticides may vary considerably from published guidelines for a number of reasons. For example, published rates are generally broadcast rates whereas a number of the rates reported in the survey were band or in-furrow rates which are one-fourth to one-third that of the broadcast rates. Also, young vegetable plants require considerably lower dosage rates of insecticides and fungicides than do older plants. For insect control, vegetables grown on sandy soils generally require lower rates of soil insecticides than the same vegetables grown on organic soils.

Weather plays an important role in the use of fungicides as low-moisture years generally require lower rates and fewer applications than high moisture years. Some varieties of

vegetables have greater resistance to specific diseases and are less attractive to insects than other varieties, requiring lower rates and fewer applications. Also, resistance of pests to pesticides plays an important role in determining rates and number of applications. Rates are generally lower when two or more pesticides with the same spectrum of control are applied in tank-mix applications than when those respective pesticides are applied as single ingredients.

RELIABILITY OF ESTIMATES

Estimates based upon sample surveys have varying degrees of statistical reliability. Confidence in data depends upon sample size, sampling methods, and the variability of the responses. To provide the user of the data with some indication of the reliability of the estimates, coefficients of variation (CV's) are presented in Appendix Table 1. The CV is a measure of relative variation (expressed in percentage terms) and can be used to indicate the degree of confidence a user can place in the estimate. The smaller the CV, the more reliable the estimate.

In simplest terms, it can be said there is 95-percent confidence that the sample represents the true population and that the true value for the population lies within an interval defined as the estimated value ± 2 CV's times the estimated value. For example, with a CV of 10 percent and an estimate of 40, the interval would be 32 to 48. However, there is a 5-percent chance that the true value does not fall within the interval as defined above because the sample is not representative of the population.

CV's were calculated only for acres treated with specific pesticides. The estimates of acres treated are expected to have greater variation than other data reported. Consequently, for most other information included in this report, the level of reliability should be equal to or greater than reported for acres treated.

RESULTS

In 1979, growers in the five regions planted 1.9 million acres of the 12 vegetables. A total of 1.8 million acres were treated using 15.8 million pounds of all pesticides in 11.5 million treatments (Table 2).

Of the 1.8 million treated acres 1.6 million, or about 90 percent were treated for weed control and 1.4 million acres, or nearly 80 percent, were treated for insect control. About 700,000 acres, or nearly 40 percent, were treated for disease control and 100,000 acres were treated for nematode control.

Of the 11.5 million total acre-treatments, insecticides comprised 5.1 million of the single ingredient applications, fungicides 3.2 million, and herbicides 1.5 million (Table 2). Southeast and Midwest growers accounted for about 5.0 million and 3.9 million, respectively, of the total 11.5 million acre-treatments. Sweet corn comprised 37 percent and tomatoes 22 percent of the 5.1 million insecticide acre-treatments

Table 2. Vegetables, by region: Acres planted, acre-treatments, and quantities of pesticides used, 12 vegetables, 1979

Item	: Northeast	: Southeast	: Midwest	: Northwest	: Southwest	: Total : 5 regions
	----- 1,000 -----					Million
<u>Acres planted a/</u>	193	361	781	322	269	1.9
<u>Acres treated b/</u>						
Weed control	171	276	664	253	223	1.6
Insect control	133	299	597	181	244	1.4
Disease control	76	295	196	18	198	.7
Other	27	42	3	9	16	.1
Any pest control	189	356	737	300	261	1.8
<u>Acre-treatments b/</u>						
<u>Single applications</u>						
Herbicides c/	173	170	756	304	146	1.6
Insecticides	313	2,323	1,750	284	455	5.1
Fungicides	112	2,108	620	27	380	3.2
Other	9	17	36	7	5	.1
Tank-mixes	205	373	724	49	186	1.5
Total	817	4,991	3,886	671	1,172	11.5
<u>Quantities, lbs. a.i. b/</u>						
<u>Single applications</u>						
Herbicides c/	472	258	1,320	668	321	3.0
Insecticides	183	1,050	1,479	200	315	3.2
Fungicides	177	2,069	958	45	561	3.8
Other	15	1,213	501	211	203	2.1
Tank-mixes d/	472	930	1,769	211	317	3.7
Total	1,319	5,520	6,027	1,335	1,717	15.8

a/ Vegetables, 1980 Annual Summary, ESS, USDA, Vg 1-2 (80), December 1980.

b/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA,

c/ Excludes 794,730 gallons of mineral spirits sprayed in 12,715 acre-treatments on carrots.

d/ Tank-mix ingredients are specified in Appendix Tables B-M.

(Table 3). Tank-mixed pesticides comprised 1.5 million acre-treatments.

Of the 15.8 million pounds of active ingredients applied, fungicides comprised approximately 25 percent and herbicides and insecticides each about 20 percent (Table 2). Pesticide tank-mixes accounted for 23 percent of the total quantity of pesticides applied. Tomato growers accounted for about 45 percent of the 3.8 million pounds of fungicides used on all crops (Table 3).

Southeast growers used pesticides more intensively than growers in any other region. For example, Southeast growers planted about the same acreage of vegetables as did Northwest growers, 19 percent versus 17 percent of the total acreage, but used considerably more acre-treatments, 43 percent versus 36 percent of the total acre-treatments (Figure 2). Midwest growers planted the most acreage and used the greatest quantity of pesticides, 41 and 38 percent, respectively.

Tomato growers used pesticides more intensively than growers of any other crop, accounting for only 6 percent of the planted acres but 26 percent of the acre-treatments (Figure 3). Other intensively treated crops included cabbage, carrots, celery, and onions. Green peas accounted for 18 percent of the planted acres and only 5 percent of the acre-treatments. Other less intensively treated crops included cucumbers, snap beans, and watermelons. Sweet corn comprised the largest proportion of planted acres and acre-treatments, accounting for nearly 30 percent of each category.

PESTICIDE USE BY CROP

In the following sections, the major pesticides used on each crop are discussed for the five regions in terms of acres planted, acres treated, acre-treatments, and quantities of pesticides applied. Some of the crops, for example celery and tomatoes, are multiple season crops grown by the same grower during two or more seasons of the year. The information presented is the total pesticide use during 1979 calendar year. Detailed data are provided by region in appendix tables.

Cabbage

In 1979, approximately 89,000 acres of cabbage were planted mostly for the fresh market, ranging from nearly 30,000 acres in the Southeast to 1,700 acres in the Northwest (Appendix A1). An estimated five-region total of 705,100 pounds of pesticides were used in 791,300 acre-treatments to treat 67,000 acres (Table 4). Tank-mixed pesticides accounted for 75,700 acre-treatments and 92,400 pounds of pesticides.

Cabbage growers used approximately 127,000 pounds of herbicides in 66,000 single application acre-treatments. Trifluralin was used to treat about 34,000 acres and comprised about 55 percent of the herbicide acre-treatments. Regionally, trifluralin comprised from 55 to 80 percent of the herbicide acre-treatments with the exception of the Southeast where it was about 25 percent (Appendix B). Other important herbicides included nitrofen, bensulide, and DCPA.

Table 3. Vegetables, by crop: Acres planted, acre-treatments, and quantities of pesticides,
12 vegetables, 1979

Crop	:Cabbage	:Canta- :loups	:Carrots	:Celery	:Cucumbers	:Green: :peas	:Lettuce	:Onions	:Snap :beans	:Sweet: :corn	:Tomatoes	:Water-: :melons	Total
----- 1,000 -----													Mil.
<u>Acres planted a/</u>	89	41	46	15	126	344	85	88	247	556	124	166	1.9
<u>Acres treated b/</u>													
Weed control	55	27	29	15	96	296	71	84	235	475	107	74	1.6
Insect control	67	36	20	13	54	245	65	84	188	433	122	90	1.4
Disease control	38	34	19	15	34	184	79	74	123	77	117	142	.7
Other	4	3	2	3	2	8	53	24	8	12	40	2	.1
Any pest control	67	39	30	15	117	296	79	87	244	537	124	156	1.8
<u>Acre-treatments b/</u>													
Herbicides c/	67	17	60	28	34	285	60	217	224	426	104	30	1.6
Insecticides	519	66	86	206	49	226	277	242	387	1,889	1,104	91	5.1
Fungicides	126	86	84	304	28	-	67	273	194	404	1,486	197	3.2
Other	4	2	3	d/	d/	-	-	18	-	17	29	1	.1
Tank-mixes	76	11	54	33	26	39	105	212	196	475	294	18	1.5
Total	792	182	287	571	137	550	509	962	1,001	3,211	3,017	337	11.5
<u>Quantities, lbs. a.i. b/</u>													
Herbicides c/	127	34	67	60	76	242	132	802	502	879	86	29	3.0
Insecticides	293	42	51	67	43	112	139	200	332	1,360	519	62	3.2
Fungicides	144	117	126	290	44	-	77	522	214	433	1,584	234	3.8
Other	49	51	472	d/	9	-	-	232	-	3	1,220	7	2.1
Tank-mixes	92	25	115	93	86	78	156	671	437	879	1,009	31	3.7
Total	705	269	831	510	258	432	504	2,427	1,485	3,554	4,418	363	15.8

a/ Vegetables, 1980 Annual Summary, ESS, USDA, Vg 1-2(80), December 1980.

b/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

c/ Excludes 794,730 gallons of mineral spirits sprayed in 12,715 acre-treatments on carrots.

d/ Less than 500.

Table 4. Cabbage: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
----- 1,000 -----						
<u>Single applications</u>						
<u>Herbicides</u>						
Trifluralin		33.9	(4)	35.9		26.4
Nitrofen		8.4	(15)	10.7		21.5
Bensulide		3.4	(1)	5.5		21.2
DCPA		6.2	(17)	6.6		26.8
Other		-		7.8		30.8
Total		-		66.5		126.8
<u>Insecticides</u>						
Methomyl		35.8	(5)	183.4		106.8
<u>Bacillus thuringiensis</u>		22.0	(8)	92.6		c/
Methamidophos		32.7	(5)	81.5		72.2
Parathion		11.7	(15)	36.9		15.4
Permethrin		3.5	(2)	19.9		6.2
Other		-		104.9		92.8
Total		-		519.3		293.4
<u>Fungicides</u>						
Maneb		14.8	(7)	75.1		104.0
Chlorothalonil		8.5	(17)	31.1		20.7
Zineb		0.8	(33)	5.1		2.1
Mancozeb		0.7	(32)	3.3		3.9
Copper hydroxide		1.2	(22)	2.3		3.0
Other		-		9.0		9.8
Total		-		126.0		143.5
<u>Nematicides</u>						
Fenamiphos		3.2	(87)	3.2		6.5
D-D		0.4	(13)	0.4		42.2
Total		-		3.6		48.7
Tank-mixtures		-		75.7		92.4
TOTAL PESTICIDES		67.0	d/	791.1		704.8

a/ Data obtained from Appendix B.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

d/ Data obtained from Table 3, acreage treated for any pest control.

Insect control is of primary importance for cabbage as indicated by 519,000 acre-treatments, 65 percent of all pesticide acre-treatments. Methomyl, Bacillus thuringiensis, and methamidphos were the primary insecticides applied by growers in single ingredient and tank-mix applications.

Maneb and chlorothalonil comprised about 85 percent of the 126,000 fungicide acre-treatments. Fenamiphos, a nematicide, was applied by Southeast growers in 3,200 acre-treatments.

Cantaloups

An estimated 40,900 acres of cantaloups were planted in the Southeast, Midwest, and Southwest (Appendix A1). Southwest growers planted about 70 percent of the total cantaloup acreage. About 269,000 pounds of pesticides were used in 192,000 acre-treatments to treat 39,000 acres (Table 5). Tank-mixed pesticides comprised about 25,000 pounds of all pesticides used in 22,700 acre-treatments.

Cantaloup growers used bensulide or trifluralin for about 85 percent of the 16,900 herbicide acre-treatments applied in single ingredient applications. Each of these herbicides accounted for about one-half of the 11,500 acre-treatments used by Southwest growers (Appendix C3). Other herbicides used by cantaloup growers included naptalam, chloramben, and benefin.

Methomyl and dimethoate comprised nearly 50 percent of the three-region total of 65,600 insecticide acre-treatments. These two insecticides were mainly used in the Southwest where they comprised 60 percent of 42,000 insecticide acre-treatments. Southeast growers used methomyl for about 85 percent of 4,200 insecticide acre-treatments, and Midwest growers used carbaryl for about 50 percent of 18,500 acre-treatments.

Maneb was applied to a three-region total of about 7,600 acres and accounted for about 40 to 45 percent of the fungicide total acre-treatments and total pounds used. Disease control is important for cantaloups as indicated by the use of fungicides relative to the other categories.

Nematicides were used in 630 acre-treatments in the Midwest and 1,080 acre-treatments in the Southwest.

Carrots

In 1979, an estimated 46,100 acres were planted in four regions, ranging from 29,100 acres in the Southeast to 2,000 acres in the Northeast (Appendix A1). A four-region total of about 30,000 acres was treated using nearly 1.0 million pounds of pesticides in 288,400 acre-treatments (Table 6). Midwest growers applied pesticides on carrots more intensively accounting for 70 percent of the four-region total of all pesticides on 30 percent of the carrot acres planted (Appendix A2). Carrot growers applied only about 2 percent of the pesticides used on the 12 vegetable crops.

Table 5. Cantaloups: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
----- 1,000 -----						
<u>Single Applications</u>						
<u>Herbicides</u>						
Bensulide		6.1 (4)		7.9		26.3
Trifluralin		6.2 (3)		6.5		3.7
Naptalam		0.5 (22)		0.5		0.8
Chloramben		0.2 (53)		0.2		0.2
Benefin		0.2 (65)		0.2		0.1
Other		-		1.7		2.7
Total		-		16.9		33.8
<u>Insecticides</u>						
Methomyl		5.1 (6)		16.1		8.8
Dimethoate		5.7 (3)		14.1		4.9
Carbaryl		2.6 (8)		9.8		6.8
Endosulfan		1.2 (24)		5.0		2.3
Parathion		2.2 (12)		3.5		2.4
Other		-		17.0		17.0
Total		-		65.6		42.3
<u>Fungicides</u>						
Maneb		7.6 (2)		36.1		51.4
Chlorothalonil		4.5 (10)		17.1		17.6
Benomyl		5.8 (10)		13.5		19.2
Folpet		2.8 (1)		7.0		11.8
Captafol		1.6 (7)		6.8		11.2
Other		-		5.3		5.6
Total		-		85.8		116.8
<u>Nematicides</u>						
D-D		1.1 (1)		1.1		39.2
Ethylene dibromide		0.7 (14)		0.7		12.2
Total		-		1.8		51.4
Tank-mixtures		-		22.7		24.7
TOTAL PESTICIDES		39.0 <u>c/</u>		191.7		268.9

a/ Data obtained from Appendix C.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Data obtained from Table 3, acreage treated for any pest control.

Table 6. Carrots: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
----- 1,000 -----						
<u>Single Applications</u>						
<u>Herbicides c/</u>						
Linuron		24.8 (4)		44.2		51.0
Trifluralin		11.0 (3)		12.3		8.4
Nitrofen		1.5 (14)		2.6		3.9
Other		-		1.2		3.6
Total		-		60.3		66.9
<u>Insecticides</u>						
Parathion		6.5 (19)		30.6		10.0
Diazinon		6.6 (19)		22.0		10.4
Carbaryl		3.9 (27)		18.8		20.4
Methomyl		1.6 (1)		6.1		2.8
Other		-		8.9		7.8
Total		-		86.4		51.3
<u>Fungicides</u>						
Maneb		10.9 (11)		43.8		62.8
Chlorothalonil		4.2 (45)		22.1		35.7
Mancozeb		1.8 (38)		16.8		26.3
Copper sulfate		0.3 (62)		0.8		0.2
Zineb		0.2 (21)		0.2		0.3
Other		-		0.5		1.3
Total		-		84.2		126.4
<u>Nematicides</u>						
D-D		1.8 (34)		1.8		408.1
Other		-		1.3		64.0
Total		-		3.1		472.1
Rodenticides		0.1		0.2		<u>d/</u>
Tank-mixtures		-		54.2		245.3
TOTAL PESTICIDES		30.0 <u>e/</u>		288.4		962.0

a/ Data obtained from Appendix D.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Excludes 794,730 gallons of mineral spirits sprayed in 12,715 acre-treatments.

d/ Less than 50 pounds.

e/ Data obtained from Table 3, acreage treated for any pest control.

Linuron was the primary herbicide used by growers in all four regions comprising about 75 percent of the total 60,300 herbicide acre-treatments and 66,900 pounds applied. Trifluralin was important also in the Northwest and Southwest regions, accounting for about 30 percent and 45 percent, respectively, of each region's herbicide acre-treatments (Appendix D3 and D4). Mineral spirits were used by growers in three regions for spraying an estimated 0.8 million gallons in about 12,700 acre-treatments.

Parathion, diazinon, and carbaryl comprised nearly 85 percent of the four-region total 86,400 insecticide acre-treatments used in single ingredient applications. Midwest growers accounted for about 85 percent of the four-region total acre-treatments (Appendix D2). Other insecticides used by carrot growers included methomyl and methyl parathion.

Maneb comprised about 50 percent of the total fungicide acre-treatments and pounds used, and chlorothalonil and mancozeb most of the remainder.

Nematicides were used by Midwest and Southeast growers in 3,100 acre-treatments, and rodenticides were used by Northwest growers in about 200 acre-treatments.

Celery

An estimated 15,400 acres of celery were planted in 1979 of which 600 acres were in the Northeast, 11,700 in the Southeast, and 3,100 acres in the Midwest (Appendix A1). A three-region total of approximately 15,000 acres were treated using 642,000 of all pesticides in 572,000 acre-treatments (Table 7). Tank-mixed pesticides comprised about 225,000 pounds used in 33,000 acre-treatments.

Celery growers used CDEC in nearly 40 percent of the three-region total 28,100 herbicide acre-treatments applied as single ingredients and in 50 percent of the total in the primary celery growing Southeast region (Appendix E). Midwest growers applied prometryne in about 60 percent of their single ingredient herbicide acre-treatments. Other herbicides used by celery growers included nitrofen and CDAA.

Permethrin and oxamyl comprised about 35 percent and 25 percent, respectively, of the three-region 206,800 insecticide acre-treatments applied in single ingredient applications. Southeast growers applied about 168,000 acre-treatments or about 80 percent of the three-region total. Other important insecticides included Bacillus thuringiensis, naled, and methomyl.

Chlorothalonil, maneb, and copper hydroxide accounted for 80 percent of the three-region 304,500 acre-treatments and 289,800 pounds used in single ingredient applications. Southeast celery growers used nearly 268,000 fungicide acre-treatments or nearly 90 percent of the 304,500 total (Appendix E2).

Cucumbers

In 1979, cucumber growers in four regions planted 126,300 acres of which 43 percent were planted in the Southeast and

Table 7. Celery: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	:	:	:
	:	Acres treated	:	Acre-treatments
	:	b/	:	Pounds applied
	:		:	
----- 1,000 -----				
<u>Single Applications</u>				
<u>Herbicides</u>				
CDEC		10.4 (5)		10.6 32.3
Prometryne		3.8 (25)		7.8 17.7
Nitrofen		3.4 (11)		5.9 4.6
CDAА		2.8 (45)		2.8 3.8
Other		-		1.0 1.9
Total		-		28.1 60.2
<u>Insecticides</u>				
Permethrin		9.3 (9)		73.0 8.3
Oxamyl		4.7 (28)		54.8 26.7
<u>Bacillus thuringiensis</u>		4.6 (21)		20.4 c/
Naled		2.1 (62)		16.3 7.5
Methomyl		1.7 (56)		13.9 9.9
Other		-		28.7 15.0
Total		-		207.1 67.4
<u>Fungicides</u>				
Chlorothalonil		8.6 (15)		94.9 62.7
Maneb		6.3 (28)		76.6 57.3
Copper hydroxide		4.6 (35)		68.9 110.8
Sulfur		1.2 (80)		17.6 13.7
Mancozeb		2.2 (51)		12.0 16.8
Other		-		34.6 28.4
Total		-		304.5 289.8
Tank-mixtures		-		32.6 224.9
TOTAL PESTICIDES		15.0 <u>d/</u>		572.3 642.3

a/ Data obtained from Appendix E.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

d/ Data obtained from Table 3, acreage treated for any pest control.

37 percent in the Midwest (Appendix A1). Cucumbers grown for the processing market comprised 75 percent of the planted acreage. Approximately 117,000 acres were treated with any pesticide using nearly 259,000 pounds of pesticides in 138,100 acre-treatments (Table 8). Nearly 26,000 acre-treatments of pesticides were applied in tank-mixes using 86,000 pounds of pesticides.

Naptalam and bensulide each comprised nearly 45 percent of the approximately 34,000 herbicide acre-treatments. Midwest growers used about 22,600 or 65 percent, of the total herbicide acre-treatments, followed by the Southeast growers using 11,050 or about 30 percent (Appendix F3).

Cucumber growers used carbaryl for nearly 70 percent of the region's 49,000 insecticide acre-treatments. In the two primary cucumber growing regions, Southeast and Midwest growers used about 19,000 acre-treatments and 14,000 acre-treatments of carbaryl, respectively. Other insecticides included endosulfan, diazinon, and methomyl.

Chlorothalonil, copper sulfate, and maneb comprised about 75 percent of the 28,000 acre-treatments used.

Green Peas

An estimated 344,500 acres of green peas were planted in 1979 for the processing market in the Northeast, Midwest, and Northwest (Appendix A1). Midwest growers planted 58 percent of the total, Northeast growers about 2 percent, and Northwest growers planted the remaining 40 percent. About 296,000 acres were treated with any pesticide using 432,000 pounds in about 550,000 acre-treatments (Table 9). Tank-mixed pesticides comprised 38,500 acre-treatments using nearly 78,000 pounds of pesticides.

Trifluralin accounted for 118,000 or about 40 percent of the 285,000 herbicide acre-treatments applied as single ingredients. Other important herbicides included 4-MCPB and dinoseb.

Methomyl comprised nearly 60 percent of the 226,000 insecticide acre-treatments and about 50 percent of the 112,000 pounds used. Methomyl was used in about 90 percent of the 132,000 acre-treatments applied by Midwest growers and less than 10 percent of the 94,000 acre-treatments used by Northwest growers (Appendix G2 and G3). In the Northwest, Bacillus thuringiensis and parathion were the primary insecticides used accounting for 60 percent of the region's acre-treatments.

Diseases are generally not a problem for green pea growers as indicated by no use of fungicides reported by surveyed growers in 1979.

Lettuce

In 1979, an estimated total of 84,600 acres were planted for commercial production in the five regions, about 70 percent of which were planted by Southwest growers (Appendix A). Of 71,000 acres treated with any pesticide, about 505,000 pounds of pesticides were used in nearly 509,000 acre-treatments

Table 8. Cucumbers: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
----- 1,000 -----						
<u>Single Applications</u>						
<u>Herbicides</u>						
Naptalam		15.2 (21)		15.2		30.3
Bensulide		14.6 (21)		15.0		41.1
Chloramben		2.3 (24)		2.3		3.6
Other		-		1.9		1.3
Total		-		34.4		76.4
<u>Insecticides</u>						
Carbaryl		13.6 (13)		33.7		31.9
Endosulfan		2.1 (21)		3.4		2.2
Diazinon		3.1 (5)		3.1		2.9
Methomyl		1.3 (80)		3.0		2.6
Other		-		6.2		3.8
Total		-		49.3		43.4
<u>Fungicides</u>						
Chlorothalonil		4.4 (34)		8.1		13.0
Copper sulfate		3.4 (14)		6.8		8.3
Maneb		2.0 (20)		6.4		9.3
Copper hydroxide		0.9 (62)		2.5		3.8
Mancozeb		0.6 (43)		2.1		4.5
Other		-		2.5		4.7
Total		-		28.3		43.7
<u>Nematicides</u>						
D-D		0.4 (16)		0.4		9.0
Tank-mixtures		-		25.7		86.3
TOTAL PESTICIDES		117.0 <u>c/</u>		138.1		258.8

a/ Data obtained from Appendix F.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Data obtained from Table 3, acreage treated for any pest control.

Table 9. Green peas: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	:	:	:
	:	Acres treated	:	Acre-treatments
	:	b/	:	Pounds applied
				----- 1,000 -----
<u>Single Applications</u>				
<u>Herbicides</u>				
Trifluralin		110.1 (10)		118.2 55.7
4-MCPB		64.6 (9)		64.6 39.9
Dinoseb		39.6 (20)		50.2 106.9
MCPA		16.7 (2)		16.7 4.9
Dalapon		15.2 (18)		15.2 11.3
Other		-		20.1 23.7
Total		-		284.8 242.4
<u>Insecticides</u>				
Methomyl		74.3 (19)		128.9 59.6
Parathion		22.4 (28)		38.8 32.2
<u>Bacillus thuringiensis</u>		24.9 (52)		24.9 <u>c/</u>
Dimethoate		10.6 (32)		10.6 2.5
Carbaryl		9.7 (77)		9.7 8.8
Other		-		13.6 8.9
Total		-		226.4 112.0
Tank-mixtures		-		38.5 77.9
TOTAL PESTICIDES		296.0 <u>d/</u>		549.7 432.3

a/ Data obtained from Appendix G.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

d/ Data obtained from Table 3, acreage treated for any pest control.

(Table 10). Tank-mixed pesticides comprised 156,000 pounds in nearly 106,000 acre-treatments.

CDEC and benefin comprised about 35 percent and 25 percent, respectively, of the total 60,000 herbicide acre-treatments. CDEC accounted for about 65 percent of the herbicide 25,100 acre-treatments used by Southeast growers and benefin 55 percent of the nearly 26,000 acre-treatments used on lettuce in the Southwest (Appendix H2 and H5). Other herbicides used in lettuce include paraquat, pronamide, and bensulide.

Insect control is important for lettuce as indicated by the approximately 277,000 acre-treatments which accounted for about 55 percent of the total acre-treatments of all pesticides. Methomyl and permethrin comprised 22 to 26 percent of the insecticide acre-treatments. Methomyl accounted for about 30 percent of the 120,000 insecticide acre-treatments applied as single ingredients by Southwest growers, and permethrin about 50 percent of the 108,000 acre-treatments applied by Southeast growers. Some of the other important insecticides used by lettuce growers included Bacillus thuringiensis, mevinphos, and parathion.

Maneb and mancozeb comprised 50 percent and 39 percent, respectively, of 66,000 fungicide acre-treatments. In the two primary lettuce growing regions, maneb was used by Southwest growers for 90 percent of the region's 16,800 fungicide acre-treatments, and mancozeb by Southeast growers for about 60 percent of the 41,000 fungicide acre-treatments.

Onions

In 1979, an estimated 87,700 acres of onions were planted in four regions with the Southwest onion growers accounting for nearly 50 percent of the acreage (Appendix A1). Of 87,000 acres treated with any pesticide, approximately 2.4 million pounds of all pesticides were used in about 963,000 acre-treatments (Table 11). Tank-mixed pesticides were used to apply about 671,000 pounds in 213,000 acre-treatments.

Nitrofen and CDAA comprised about 35 percent and 25 percent, respectively, of the herbicide acre-treatments, and were the major herbicides used by Northeast and Midwest growers (Appendix I1 and I2). In the primary onion growing Southwest region, bensulide and DCPA comprised nearly 70 percent of the herbicide acre-treatments (Appendix I4).

Parathion accounted for about 45 percent of the 242,000 insecticide acre-treatments applied as single ingredient applications, and was the major insecticide used by growers in each of the four onion-growing regions. Other important insecticides included diazinon, methyl parathion, toxaphene, and carbaryl.

Maneb comprised about 55 percent of the 273,000 fungicide acre-treatments followed by chlorothalonil with nearly 30 percent (Table 11). Maneb was used by Southwest growers in about 90 percent of the 146,000 acre-treatments applied in single ingredient applications (Appendix I4).

Table 10. Lettuce: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
			-----	1,000	-----	
<u>Single Applications</u>						
<u>Herbicides</u>						
CDEC		12.9 (12)		20.6		73.1
Benefin		13.9 (1)		14.3		13.7
Paraquat		7.6 (26)		9.4		4.1
Pronamide		6.7 (6)		6.7		7.1
Bensulide		5.3 (7)		5.5		26.1
Other		-		3.6		7.8
Total		-		60.0		132.0
<u>Insecticides</u>						
Methomyl		20.4 (6)		71.6		37.3
Permethrin		9.5 (7)		62.1		6.4
<u>Bacillus thuringiensis</u>		12.8 (6)		37.0		c/
Mevinphos		10.2 (5)		28.0		21.2
Parathion		5.4 (7)		16.7		11.3
Other		-		62.0		63.8
Total		-		277.3		140.0
<u>Fungicides</u>						
Maneb		8.4 (8)		33.1		33.4
Mancozeb		5.1 (15)		25.8		35.9
Copper hydroxide		0.7 (81)		4.1		3.4
Chlorothalonil		0.5 (44)		0.5		0.7
Other		-		2.4		3.3
Total		-		65.9		76.6
Tank-mixtures		-		105.5		156.4
TOTAL PESTICIDES		71.0 <u>d/</u>		508.7		505.0

a/ Data obtained from Appendix H.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

d/ Data obtained from Table 3, acreage treated for any pest control.

Table 11. Onions: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
				1,000		
<u>Single Applications</u>						
<u>Herbicides</u>						
Nitrofen		31.9 (6)		81.4		119.3
CDAА		21.1 (8)		52.7		346.9
DCPA		23.5 (3)		29.3		169.4
Chloroprotham		10.6 (26)		18.4		55.8
Bensulide		14.8 (1)		16.3		58.8
Other		-		18.9		52.1
Total		-		217.1		802.3
<u>Insecticides</u>						
Parathion		27.9 (9)		103.2		52.4
Diazinon		10.5 (18)		35.1		20.9
Methyl parathion		5.1 (27)		27.3		11.6
Toxaphene		8.6 (4)		20.7		33.6
Carbaryl		3.9 (38)		15.0		12.8
Other		-		40.6		68.6
Total		-		241.9		199.9
<u>Fungicides</u>						
Maneb		25.9 (6)		152.0		254.7
Chlorothalonil		16.5 (13)		77.0		128.1
Mancozeb		7.7 (17)		25.3		49.2
Anilazine		1.9 (22)		3.6		4.7
Other		-		15.0		85.0
Total		-		272.9		521.7
<u>Sprout control</u>						
Maleic hydrazide		17.0 (9)		17.0		36.7
Tank-mixtures		-		213.2		671.2
TOTAL PESTICIDES		87.0 <u>c/</u>		963.0		2,426.6

a/ Data obtained from Appendix I.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Data obtained from Table 3, acreage treated for any pest control.

About 17,000 acre-treatments of maleic hydrazide were used during the growing season for sprout control during storage.

Snap Beans

An estimated 246,600 acres of snap beans were planted in 1979 in the five regions, ranging from 118,600 acres planted by Midwest growers to 1,700 acres planted by Southwest growers (Appendix A1). About 85 percent of the total acreage was planted for the processing market. Of 244,000 acres treated with any pesticide, nearly 1.5 million pounds of all pesticides were used in about 1.0 million acre-treatments (Table 12). Tank-mixed pesticides were used to apply about 437,000 pounds of all pesticides in 196,000 acre-treatments.

Dinoseb comprised about 40 percent of the 223,700 herbicide acre-treatments applied in single ingredient applications, followed by EPTC with 26 percent and trifluralin with 17 percent. Dinoseb was the major herbicide used in the primary snap bean growing Midwest region (Appendix J3).

Carbaryl and methomyl accounted for about 40 percent and 30 percent, respectively, of the 387,300 insecticide acre-treatments applied in single ingredient applications (Table 12). Other important insecticides used by snap bean growers included parathion, acephate, and fonofos.

Copper sulfate and copper hydroxide comprised nearly 60 percent and 30 percent, respectively, of the fungicides applied as single ingredient applications. Midwest growers had the greatest disease control problem, accounting for 174,000 acre-treatments or 90 percent of the 194,000 five-region total (Table 12 and Appendix J3).

Sweet Corn

In 1979, an estimated 555,900 acres were planted to sweet corn of which about 75 percent were planted for the processing market (Appendix A1). Midwest growers accounted for nearly 50 percent of the total planted acreage with nearly all of their production going to the processing market. Of 537,000 acres treated with any pesticide, nearly 3.6 million pounds of pesticides were used in 3.2 million acre-treatments (Table 13). About 900,000 pounds of pesticides were applied as tank-mixes in 475,000 acre-treatments.

Atrazine and alachlor each accounted for about 30 percent of the herbicide acre-treatments. Other important herbicide uses included cyanazine, butylate, and EPTC.

Insect control accounted for nearly 1.9 million acre-treatments or approximately 60 percent of the total pesticide acre-treatments. Methomyl comprised about 55 percent of the 1.9 million total, and was the major insecticide used in every region but the Midwest (Appendix K). Sweet corn growers in the Midwest used carbaryl in about 45 percent of their total acre-treatments compared with about 25 percent for methomyl.

Southeast growers, who accounted for only about 10 percent of the planted acreage, applied nearly all of the 405,000

Table 12. Snap beans: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	:	:	:
		Acres treated	:	Acre-treatments
		b/	:	Pounds applied
			----- 1,000 -----	
<u>Single Applications</u>				
<u>Herbicides</u>				
Dinoseb		83.8 (12)	86.4	187.7
EPTC		57.5 (9)	58.8	181.9
Trifluralin		37.5 (18)	37.5	16.8
Profluralin		5.0 (12)	5.0	2.5
Glyphosate		0.3 (51)	0.3	0.5
Other		-	35.6	112.5
Total		-	223.7	502.0
<u>Insecticides</u>				
Carbaryl		57.2 (9)	157.3	191.2
Methomyl		30.9 (23)	122.4	68.0
Parathion		18.6 (39)	44.8	16.5
Acephate		15.7 (31)	16.7	13.5
Fonofos		15.8 (1)	15.8	17.4
Other		-	30.3	25.4
Total		-	387.3	332.0
<u>Fungicides</u>				
Copper sulfate		33.8 (11)	111.8	93.2
Copper hydroxide		29.5 (54)	54.6	101.1
Benomyl		20.6 (21)	21.5	12.1
Other		-	6.0	7.5
Total		-	193.9	213.8
Tank-mixtures		-	195.9	437.3
TOTAL PESTICIDES		244.0 <u>c/</u>	1,000.8	1,485.1

a/ Data obtained from Appendix J.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Data obtained from Table 3, acreage treated for any pest control.

Table 13. Sweet corn: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	Acres treated	:	Acre-treatments	:	Pounds applied
		b/				
			-----	1,000	-----	
<u>Single Applications</u>						
<u>Herbicides</u>						
Atrazine		134.4 (8)		138.3		200.4
Alachlor		130.1 (11)		133.2		256.3
Cyanazine		41.2 (18)		41.2		111.0
Butylate		23.1 (24)		23.2		81.1
EPTC		22.1 (18)		22.1		89.6
Other		-		67.4		140.9
Total		-		425.5		879.3
<u>Insecticides</u>						
Methomyl		186.0 (5)		1,057.6		423.4
Carbaryl		139.5 (4)		359.5		507.2
Toxaphene		19.8 (27)		153.0		183.9
Parathion		39.7 (9)		109.1		55.3
Fonofos		54.7 (9)		61.9		71.2
Other		-		147.8		118.7
Total		-		1,888.8		1,359.7
<u>Fungicides</u>						
Mancozeb		18.6 (23)		228.0		254.0
Maneb		26.9 (23)		175.1		177.4
Other		-		1.7		1.6
Total		-		404.8		433.0
<u>Other Reasons</u>						
Avitrol		16.8 (42)		16.8		3.3
Tank-mixtures		-		475.0		879.1
TOTAL PESTICIDES		537.0 <u>c/</u>		3,210.9		3,554.4

a/ Data obtained from Appendix K.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Data obtained from Table 3, acreage treated for any pest control.

fungicide acre-treatments of single ingredient applications. Mancozeb and maneb comprised 56 percent and 43 percent, respectively, of the fungicide treatments.

Tomatoes

An estimated 124,300 acres of tomatoes were planted in 1979, about 60 percent of which were planted for the fresh market (Appendix A1). Southeast and Midwest growers accounted for about 43 percent and 35 percent, respectively, of the total acreage. All of the Southeast tomatoes were planted for the fresh market compared with only 16 percent in the Midwest. Tomato growers used pesticides more intensively relative to the other crops. Tomatoes accounted for only 6 percent of the planted acreage but 26 percent of the acre-treatments and 28 percent of the quantity used. An estimated 4.4 million pounds of all pesticides were used to treat 124,000 acres using 3.0 million acre-treatments (Table 14). Tank-mixed pesticides accounted for about 1.0 million pounds of pesticides applied in an estimated 293,500 acre-treatments.

Tomato growers used 104,000 single ingredient acre-treatments for weed control, or only 3 percent of the 3.0 million acre-treatments of all pesticides. Paraquat was the major herbicide used by Southeast tomato growers and paraquat and metribuzin the major herbicides used by Midwest growers (Appendix L2 and L3).

Methomyl, Bacillus thuringiensis, and methamidophos comprised about 60 percent of the 1.1 million insecticide acre-treatments used by growers in the five regions. These three insecticides accounted for about 65 percent of the 935,000 acre-treatments used by Southeast growers. Carbaryl comprised about 50 percent of the estimated 122,000 acre-treatments reported by Midwest growers.

Disease control is important for tomato production as indicated by fungicides comprising about 1.5 million acre-treatments, about one-half of the 3.0 million total pesticide acre-treatments. Copper compounds, mancozeb, maneb, and chlorothalonil accounted for about 80 percent of the fungicide acre-treatments and quantities used.

Growers applied nematicides using about 1.2 million pounds in 14,000 acre-treatments. Ethepron, a growth regulator, was used for about 15,000 acre-treatments.

Watermelons

In 1979, approximately 166,300 acres of watermelons were planted, of which Southeast growers accounted for 63 percent, Southwest growers 34 percent, and Midwest growers the remaining 3 percent (Appendix A1). Watermelon growers use pesticides less intensively relative to other crops. Watermelons accounted for 9 percent of the 12 vegetable planted acreage but only 3 percent of the acre-treatments and 2 percent of the quantity applied.

An estimated 367,000 pounds of all pesticides were used to treat 156,000 acres using 336,000 acre-treatments (Table 15).

Table 14. Tomatoes: Acres treated, acre-treatments, and quantities applied, 1979 ^{a/}

Active ingredients	Acres treated b/	Acre-treatments	Pounds applied
		1,000	
<u>Single Applications</u>			
<u>Herbicides</u>			
Trifluralin	29.5 (7)	31.2	24.5
Paraquat	19.0 (10)	28.6	17.9
Metribuzin	22.8 (10)	28.4	12.8
Diphenamid	6.1 (21)	6.1	17.1
Pebulate	2.9 (26)	2.9	2.5
Other	-	6.9	10.8
Total	-	104.1	85.6
<u>Insecticides</u>			
Methomyl	37.3 (6)	341.3	168.5
<u>Bacillus thuringiensis</u>	21.2 (11)	179.0	c/
Methamidophos	28.1 (6)	124.3	112.8
Permethrin	16.1 (12)	90.4	5.4
Carbaryl	22.8 (7)	85.0	91.8
Other	-	283.9	140.7
Total	-	1,103.9	519.3
<u>Fungicides</u>			
Copper compounds	30.8 (8)	376.1	315.6
Mancozeb	23.8 (9)	330.2	381.5
Maneb	29.8 (9)	260.8	286.3
Chlorothalonil	36.1 (7)	256.7	258.6
Captafol	15.0 (12)	51.8	86.8
Other	-	210.9	255.1
Total	-	1,486.5	1,583.8
<u>Nematicides</u>			
Chloropicrin-methyl bromide	7.2 (15)	7.4	886.2
D-D	4.0 (39)	4.0	183.0
Ethylene dibromide	1.7 (50)	1.7	10.7
Other	-	0.7	120.4
Total	-	13.8	1,200.3
<u>Other reasons</u>			
Ethepron	14.1 (10)	15.3	20.2
Tank-mixtures	-	293.5	1,009.2
TOTAL PESTICIDES	124.0 d/	3,017.1	4,418.3

a/ Data obtained from Appendix L.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

d/ Data obtained from Table 3, acreage treated for any pest control.

Tank-mixes were used to apply about 31,000 pounds in 17,000 acre-treatments.

Trifluralin accounted for 11,000 of the 30,000 herbicide acre-treatments applied in single ingredient applications, and was the major herbicide used by Southwest growers (Appendix M2). Other important herbicides included bensulide and DCPA.

Methomyl and parathion were used in nearly 50 percent of the 91,000 insecticide acre-treatments applied as single ingredients. Methomyl and dimethoate were the primary insecticides used by Southeast growers, and parathion and carbaryl the primary insecticides used by Southwest growers.

Disease control accounted for nearly 200,000 acre-treatments applied in single ingredient applications of 60 percent of the total acre-treatments of all pesticides. Maneb and chlorothalonil involved about 40 percent and 30 percent, respectively, of the fungicide acre-treatments.

Table 15. Watermelons: Acres treated, acre-treatments, and quantities applied, 1979 a/

Active ingredients	:	:	:	:
	:	Acres treated	Acres treated	Pounds applied
	:	b/	:	:
----- 1,000 -----				
<u>Single Applications</u>				
<u>Herbicides</u>				
Trifluralin		9.3 (6)	11.0	5.9
Bensulide		3.6 (14)	5.0	12.3
DCPA		0.8 (89)	4.8	2.4
Naptalam		0.8 (25)	0.8	1.3
Butralin		0.8 (23)	0.8	1.6
Other		-	7.5	5.4
Total		-	30.0	28.9
<u>Insecticides</u>				
Methomyl		5.4 (5)	23.5	19.3
Parathion		7.0 (14)	19.8	9.9
Carbaryl		6.1 (14)	12.8	11.8
Dimethoate		3.1 (22)	11.9	4.6
<u>Bacillus thuringiensis</u>		2.3 (17)	8.9	c/
Other		-	14.4	16.3
Total		-	91.3	61.9
<u>Fungicides</u>				
Maneb		17.3 (8)	79.5	106.7
Chlorothalonil		22.7 (8)	61.9	63.6
Benomyl		7.3 (17)	15.9	12.7
Captafol		5.2 (22)	11.6	16.1
Mancózeb		2.6 (29)	10.1	16.8
Other		-	18.0	22.8
Total		-	197.1	238.8
<u>Nematicides</u>				
Ethylene dibromide		0.5 (22)	0.5	6.8
Tank-mixtures		-	17.0	30.5
TOTAL PESTICIDES		156.0 <u>d/</u>	335.9	366.9

a/ Data obtained from Appendix M.

b/ Coefficients of variation for acres treated (in percent) are in parentheses; acres treated not summed to avoid double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

d/ Data obtained from Table 3, acreage treated for any pest control.

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APPENDIX TABLES

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Table A1. Acres planted in 1979, fresh and processing market, by region a/

Market	Northeast	Southeast	Midwest	Northwest	Southwest	Total
----- 1,000 acres -----						
Cabbage						
Fresh	14.4	29.7	10.8	1.7	23.7	80.8
Processing	3.7	-	4.8	-	b/	8.5
Total	18.1	29.7	15.6	1.7	23.7	88.8
Cantaloups						
Fresh	-	7.9	3.9	-	29.1	40.9
Carrots						
Fresh and processing	2.0	-	13.7	6.7	23.7	46.1
Celery						
Fresh	.6	11.7	3.1	-	-	15.4
Cucumbers						
Fresh	4.7	14.5	2.0	-	10.9	32.1
Processing	1.5	40.2	44.7	-	7.8	94.2
Total	6.2	54.7	46.7	-	18.7	126.3
Green Peas						
Processing	6.3	-	198.8	139.4	-	344.5
Lettuce						
Fresh	7.5	14.1	3.7	1.3	58.0	84.6
Onions						
Fresh and processing	15.7	-	10.5	19.0	42.5	87.7
Snap beans						
Fresh	14.0	17.1	4.3	-	-	35.4
Processing	49.2	5.2	114.3	40.8	1.7	211.2
Total	63.2	22.3	118.6	40.8	1.7	246.6
Sweet corn						
Fresh	34.5	63.3	31.2	3.9	4.9	137.8
Processing	21.6	-	287.5	109.0	-	418.1
Total	56.1	63.3	318.7	112.9	4.9	555.9

- continued

Table A1. Acres planted in 1979, fresh and processing market, by region a/
 --continued

Market	Northwest	Southwest	Midwest	Southeast	Northeast	Total
----- <u>1,000 acres</u> -----						
Tomatoes						
Fresh	7.0	10.3	6.8	53.1	10.3	77.2
Processing	-	7.3	36.5	-	-	47.1
Total	-	17.6	43.3	53.1	-	124.3
Watermelons						
Fresh	-	-	5.2	104.3	-	166.3
12 crops						
Fresh and processing	321.8	269.4	781.8	361.1	193.3	1,927.4

a/ Vegetables, 1980 Annual Summary, ESS, USDA, Vg 1-2(80), December 1980.

b/ Less than 50 acres.

Table A2. Regional distribution: Proportion of acres planted, acre-treatments, and quantity of all pesticides used, 12 crops, by region, 1979

Item	:Northeast	:Southeast	:Midwest	:Northwest	:Southwest	: Total
Share of planted acreage by crop a/						
	-----Percent of regional total-----					
Cabbage	20	33	18	2	27	100
Cantaloups	-	19	10	-	71	100
Carrots	4	-	30	15	51	100
Celery	4	76	20	-	-	100
Cucumbers	5	43	37	-	15	100
Green peas	2	-	58	40	-	100
Lettuce	9	17	4	2	69	100
Onions	18	-	12	22	48	100
Snap beans	26	9	48	17	1	100
Sweet corn	10	11	57	20	1	100
Tomatoes	14	43	35	-	8	100
Watermelon	-	63	3	-	34	100
Total	10	19	40	17	14	100
Share of acre-treatments by crop b/						
	-----Percent of regional total-----					
Cabbage	14	27	26	c/	32	100
Cantaloups	-	7	27	-	66	100
Carrots	1	-	70	5	23	100
Celery	4	80	17	-	-	100
Cucumbers	3	40	55	-	3	100
Green peas	1	-	62	37	-	100
Lettuce	10	35	5	c/	50	100
Onions	27	-	34	10	29	100
Snap beans	8	2	80	10	c/	100
Sweet corn	5	49	37	8	2	100
Tomatoes	4	77	19	-	1	100
Watermelon	-	57	7	-	36	100
Total	7	43	34	6	10	100
Share of quantity of pesticide use by crop b/						
	-----Percent of regional total-----					
Cabbage	14	23	21	c/	42	100
Cantaloups	-	5	26	-	69	100
Carrots	c/	-	77	1	22	100
Celery	5	54	41	-	-	100
Cucumbers	4	28	64	-	3	100
Green peas	1	-	43	56	-	100

- continued

Table A2. Regional distribution: Proportion of planted acres, acres-treatments, and quantity of all pesticides used, 12 crops, by region, 1979 - continued

Item	:Northeast	:Southeast	:Midwest	:Northwest	:Southwest	: Total
Lettuce	14	28	5	<u>c/</u>	53	100
Onions	25	-	31	<u>22</u>	22	100
Snap beans	11	1	75	13	<u>c/</u>	100
Sweet corn	5	36	48	10	<u>1</u>	100
Tomatoes	3	75	21	-	1	100
Watermelon	-	56	9	-	35	100
Total	8	34	38	8	11	100

a/ Vegetables, 1980 Annual Summary, ESS, USDA, Vg 1-2(80), December 1980.

b/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

c/ Less than 0.5 percent.

Table A3. Crop distribution: Proportion of acres planted, acre-treatments, and quantity of all pesticides used, 12 crops, by region, 1979

Item	: Northeast	: Southeast	: Midwest	: Northwest	: Southwest	: Total
<u>Share of acreage by crop a/</u>						
	----- <u>Percent of crop total</u> -----					
Cabbage	9	8	2	1	9	5
Cantaloups	-	2	<u>c/</u>	-	11	2
Carrots	1	-	2	2	9	2
Celery	<u>c/</u>	3	<u>c/</u>	-	-	1
Cucumbers	3	15	6	-	7	7
Green peas	3	-	25	43	-	18
Lettuce	4	4	1	1	22	4
Onions	8	-	1	6	16	5
Snap beans	33	6	15	13	1	13
Sweet corn	29	18	41	35	2	29
Tomatoes	9	15	6	-	4	6
Watermelon	-	29	1	-	21	9
Total	100	100	100	100	100	100
<u>Share of acre-treatments by crop b/</u>						
	----- <u>Percent of crop total</u> -----					
Cabbage	14	4	5	<u>c/</u>	21	7
Cantaloups	-	<u>c/</u>	1	-	10	2
Carrots	<u>c/</u>	-	5	2	6	3
Celery	3	9	2	-	-	5
Cucumbers	<u>c/</u>	1	2	-	<u>c/</u>	1
Green peas	1	-	9	30	-	5
Lettuce	6	4	1	<u>c/</u>	22	4
Onions	32	-	8	14	24	8
Snap beans	9	<u>c/</u>	21	15	<u>c/</u>	9
Sweet corn	20	31	30	38	4	28
Tomatoes	15	46	14	-	2	26
Watermelon	-	4	1	-	10	3
Total	100	100	100	100	100	100
<u>Share of quantity of pesticide use by crop b/</u>						
	----- <u>Percent of crop total</u> -----					
Cabbage	7	3	2	<u>c/</u>	17	4
Cantaloups	-	<u>c/</u>	1	-	11	2
Carrots	<u>c/</u>	-	12	1	12	6
Celery	2	6	4	-	-	4
Cucumbers	1	1	3	-	<u>c/</u>	2
Green peas	<u>c/-</u>	-	3	18	-	3

- continued

Table A3. Crop distribution: Proportion of acres planted, acres-treatments, and quantity of all pesticides used, 12 crops, by region, 1979 - continued

Item	: Northeast	: Southeast	: Midwest	: Northwest	: Southwest	: Total
Lettuce	5	3	c/	c/	16	3
Onions	46	-	12	40	32	15
Snap beans	12	c/	18	15	c/	9
Sweet corn	13	23	28	26	3	22
Tomatoes	12	60	15	-	1	28
Watermelon	-	4	1	-	8	2
Total	100	100	100	100	100	100

a/ Vegetables, 1980 Annual Summary, ESS, USDA, Vg 1-2(80), December 1980.

b/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

c/ Less than 0.5 percent.

Table B1. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient			: Total
				: Per acre	: Per time	: Annual	
				: applied	: average		
Single applications							
Herbicides							
DCPA	1,700	2,320	1.3	8.6	11.8		20,090
Nitrofen	990	1,000	1.0	2.0	2.1		2,090
Trifluralin	6,880	6,880	1.0	.7	.7		5,060
Other	-	430	-	3.5	-		1,530
Total	-	10,630	-	2.7	-		28,770
Insecticides							
Azinphosmethyl	1,020	2,860	2.8	.5	1.4		1,440
Bacillus							
<u>thuringiensis</u> c/	2,120	3,940	1.8	-	-		-
Diazinon	1,760	2,260	1.2	.7	.9		1,670
Endosulfan	3,200	5,470	1.7	.7	1.2		4,060
Fonofos	280	280	1.0	1.6	1.6		470
Meta-systox	2,080	3,260	1.5	.2	.4		900
Methamidophos	4,720	10,420	2.2	.9	2.1		10,000
Methomyl	3,410	12,330	3.6	.5	1.9		6,790
Mevinphos	1,900	3,090	1.6	.3	.5		1,100
Parathion	3,930	9,760	2.4	.6	1.5		6,050
Other	-	22,130	-	.1	-		1,560
Total	-	75,800	-	.4	-		34,040
Fungicides							
Chlorothalonil	1,670	4,070	2.4	1.0	2.4		4,170
Copper hydroxide	730	1,430	1.9	1.2	2.5		1,840
Maneb	1,610	3,290	2.0	1.6	3.4		5,580
Zineb	230	450	1.9	1.5	2.9		680
Other	-	100	-	.9	-		90
Total	-	9,340	-	1.3	-		12,360
Tank-mixes							
Azinphosmethyl	140	140	1.0	.5	.5		70
+ meta-systox				.3	.3		40
Azinphosmethyl	690	1,960	2.8	.2	.6		450
+ parathion				.5	1.4		980
Azinphosmethyl							
+ fungicides							
+ insecticides	200	330	1.6	1.9	3.1		630

-- continued

Table B1. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
<u>Tank-mixes (cont'd)</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>						
+ fungicides						
+ insecticides	3,080	8,800	2.8	.8	2.3	7,370
Chlorothalonil						
+ insecticides	570	570	1.0	2.1	2.1	1,240
Copper hydroxide	210	670	3.1	1.4	4.4	940
+ sulfur				.8	2.5	530
DCPA	210	210	1.0	5.9	5.9	1,250
+ nitrofen				4.0	4.0	830
Endosulfan	1,160	2,030	1.7	.6	1.1	1,360
+ parathion				.8	1.4	1,630
Maneb	290	660	2.2	1.5	3.6	1,050
+ methamidophos				1.0	2.3	660
+ parathion				.5	1.1	330
Methomyl						
+ fungicides						
+ insecticides	170	580	3.4	1.6	5.5	950
Other	-	1,670	-	1.1	-	1,980
Total	-	17,620	-	1.2	-	22,290
TOTAL PESTICIDES	-	113,390	-	.8	-	97,460

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table B2. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
				: Per time	: average	
<u>Single applications</u>						
<u>Insecticides</u>						
Azinphosmethyl	310	630	2.0	0.4	1.0	310
Bacillus						
<thuringiensis <="" c="" th=""> <td>7,040</td> <td>23,090</td> <td>3.2</td> <td>-</td> <td>-</td> <td>-</td> </thuringiensis>	7,040	23,090	3.2	-	-	-
Carbaryl	2,250	8,720	3.8	1.0	4.1	9,270
Diazinon	1,200	1,200	1.0	0.5	0.5	700
Endosulfan	80	340	4.2	0.8	3.6	290
Methamidophos	10,600	28,710	2.7	0.7	2.0	21,840
Methomyl	14,110	65,390	4.6	0.6	2.9	41,200
Parathion	2,390	5,850	2.4	0.3	0.9	2,240
Phosdrin	120	250	2.0	0.4	1.0	120
Phosphamidon	880	880	1.0	1.0	1.0	880
Other	-	2,250	-	0.8	-	1,860
Total	-	137,310	-	0.5	-	78,710
<u>Fungicides</u>						
Chlorothalonil	3,990	17,600	4.4	.4	2.0	8,200
Mancozeb	690	3,300	4.7	1.1	5.6	3,890
Maneb	4,960	20,500	4.1	1.0	4.1	20,790
Metiram	670	2,020	3.0	.2	0.6	420
Other	-	2,020	-	0.7	-	1,480
Total	-	45,440	-	0.7	-	34,780
<u>Herbicides</u>						
CDEC	2,450	2,520	1.0	1.9	1.9	4,830
DCPA	2,860	2,860	1.0	4.1	4.1	11,980
Nitrofen	4,010	5,000	1.2	1.5	1.9	7,960
Trifluralin	3,910	4,140	1.0	0.5	0.5	2,100
Other	-	1,400	-	1.0	-	1,420
Total	-	15,920	-	1.7	-	28,290
<u>Nematicides</u>						
Fenamiphos	3,180	3,180	1.0	2.0	2.0	6,490
Total	-	3,180	-	2.0	-	6,490

- continued

Table B2. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/ - continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per time : : applied :	: Per acre : : average :	: Annual : : Total :
<u>Tank mixtures</u>						
<u>Bacillus</u> <u>thuringiensis</u> c/ + fungicides	310	2,160	6.9	0.1	0.4	150
<u>Bacillus</u> <u>thuringiensis</u> c/ + insecticides	560	560	1.0	2.6	2.6	1,480
<u>Bacillus</u> <u>thuringiensis</u> c/ + dimethoate	40	350	8.7	-	-	-
<u>Bacillus</u> <u>thuringiensis</u> c/ + methomyl	1,250	4,610	3.6	-	-	-
Maneb + methomyl	120	270	2.2	1.1	2.6	320
				0.3	0.8	100
Methomyl + fungicides	1,200	3,780	3.1	0.7	2.3	2,820
Other	-	2,500	-	2.0	-	5,000
Total	-	14,230	-	0.7	-	10,950
TOTAL PESTICIDES	-	216,080	-	0.7	-	159,220

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table B3. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/ - continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per acre : : Per time : : applied :	: Annual : : average : : :	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Nitrofen	2,770	3,930	1.4	2.4	3.5	9,760
Trifluralin	11,690	11,760	1.0	.6	.6	7,220
Other	-	820	-	2.9	-	2,430
Total	-	16,510	-	1.1	-	19,410
<u>Insecticides</u>						
Azinphosmethyl	2,710	7,720	2.8	.8	2.3	6,250
<u>Bacillus</u>						
<u>thuringiensis c/</u>	5,910	26,140	4.4	-	-	-
Carbaryl	2,970	6,400	2.1	1.0	2.1	6,480
Demeton	480	880	1.8	.3	.7	340
Diazinon	2,900	4,340	1.4	.8	1.3	3,830
Dimethoate	800	1,620	2.0	.2	.5	460
Endosulfan	1,090	2,450	2.2	.6	1.4	1,530
Methamidophos	7,990	18,040	2.2	.7	1.7	14,260
Methomyl	6,150	50,140	8.1	.6	5.0	30,780
Mevinphos	920	2,140	2.3	.6	1.4	1,310
Parathion	5,370	21,280	3.9	.3	1.3	7,110
Other	-	4,820	-	.8	-	4,030
Total	-	145,970	-	.5	-	76,380
<u>Fungicides</u>						
Chlorothalonil	2,080	7,610	3.6	0.7	2.6	5,610
Copper hydroxide	470	860	1.8	1.2	2.2	1,080
PCNB	740	740	1.0	1.2	1.2	900
Sulfur	410	2,020	4.9	2.6	12.8	5,260
Zineb	580	4,620	7.9	.3	2.3	1,390
Other	-	720	-	1.2	-	900
Total	-	16,570	-	.9	-	15,140
<u>Tank mixtures</u>						
Azinphosmethyl + toxaphene	740	740	1.0	.7	.7	550
<u>Bacillus</u>						
<u>thuringiensis c/</u> + fungicides + insecticides	360	400	1.1	2.0	2.2	810

--continued

Table B3. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per acre :		
				: Per time : : applied :	: Annual : : average :	: Total
<u>Tank mixtures (cont'd)</u>						
<u>Bacillus</u> <u>thuringiensis c/</u> + carbaryl	110	870	7.9	-	-	-
				.9	7.1	780
<u>Bacillus</u> <u>thuringiensis c/</u> + carbaryl + methomyl	60	460	7.6	-	-	-
				.8	5.8	350
				.7	5.5	330
<u>Bacillus</u> <u>thuringiensis c/</u> + chlorothalonil	40	140	3.5	-	-	-
				.9	3.0	120
<u>Bacillus</u> <u>thuringiensis c/</u> + maneb + ethylan + mevinphos	110	640	5.8	-	-	-
				.8	4.6	510
				-	.1	10
				.3	1.5	160
<u>Bacillus</u> <u>thuringiensis c/</u> + methomyl	800	2,900	3.6	-	-	-
				1.4	5.0	4,020
<u>Bacillus</u> <u>thuringiensis c/</u> + oils	4,220	13,620	3.2	-	-	-
				-	.1	430
<u>Bacillus</u> <u>thuringiensis c/</u> + fungicides + parathion	600	2,260	3.7	-	-	-
				.1	.2	130
				.2	.8	470
Carbaryl + copper sulfate + maneb	190	750	3.9	.7	3.0	570
				.4	1.4	270
				1.6	6.4	1,210
Carbaryl + fungicides	10	20	2.0	2.0	4.0	40

-- continued

Table B3. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per time : applied :	: Per acre : average :	: Annual : Total :

Tank mixtures (cont'd)

Carbaryl + fungicides + insecticides	280	520	1.8	.3	2.4	690
Fonofos + trifluralin	40	40	1.0	1.7 1.0	1.7 1.0	70 40
Methomyl + maneb	120	700	5.8	.1 .8	.6 4.8	80 570
Parathion + toxaphene	460	3,680	8.0	.2 6.0	2.2 48.0	1,040 22,100
Other	-	1,280	-	1.7	-	2,290
Total	-	29,020	-	1.3	-	38,750
TOTAL PESTICIDES	-	209,070	-	.7	-	149,680

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table R4. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Nitrofen	60	70	1.1	2.1	2.5	150
Trifluralin	350	350	1.0	.4	.4	160
Other	-	20	-	3.5	-	70
Total	-	440	-	.8	-	380
<u>Insecticides</u>						
Azinphosmethyl	100	150	1.5	.4	.7	70
Diazinon	120	190	1.5	1.3	2.0	250
Endosulfan	130	380	2.9	.3	1.1	150
Naled	140	280	2.0	.4	.9	130
Other	-	110	-	.5	-	60
Total	-	1,110	-	.5	-	660
<u>Fungicides</u>						
Chlorothalonil	40	40	1.0	.7	.7	30
<u>Tank-mixes</u>						
Azinphosmethyl + insecticides	90	190	2.1	1.2	2.6	240
Methomyl + meta-systox	20	40	2.0	.5	1.0	20
				.5	1.0	20
Other	-	20	-	1.0	-	20
Total	-	250	-	1.2	-	300
TOTAL PESTICIDES	-	1,840	-	.7	-	1,370

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table B5. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ b/

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	3,350	5,480	1.6	3.8	6.3	21,190
DCPA	3,280	3,690	1.1	4.0	4.5	14,770
Nitrofen	500	680	1.3	2.2	3.0	1,510
Trifluralin	11,060	12,780	1.1	.9	1.0	11,800
Other	-	130	-	2.7	-	360
Total	-	22,760	-	2.1	-	49,630
<u>Insecticides</u>						
<u>Bacillus</u>						
thuringiensis c/	6,910	39,370	5.6	-	-	-
Disulfoton	6,100	10,020	1.6	3.0	4.9	30,250
Methamidophos	9,340	24,300	2.6	1.0	2.7	26,040
Methomyl	12,060	55,560	4.6	.5	2.3	28,020
Monocrotophos	1,480	5,460	3.6	.3	1.2	1,780
Permethrin	3,510	19,900	5.6	.3	1.7	6,160
Other	-	3,830	-	2.7	-	10,670
Total	-	158,440	-	.6	-	102,920
<u>Fungicides</u>						
Chlorothalonil	700	1,790	2.5	1.4	3.7	2,600
Maneb	8,180	51,290	6.2	1.5	9.4	77,630
Methomyl	420	840	2.0	.4	.9	380
Other	-	320	-	.6	-	210
Total	-	54,240	-	1.4	-	80,820
<u>Nematicides</u>						
D-D	340	340	1.0	123.8	123.8	42,120
<u>Tank-mixes</u>						
<u>Bacillus</u>						
thuringiensis c/ + fungicides + insecticides	4,990	5,810	1.1	1.0	1.2	6,080
<u>Bacillus</u>						
thuringiensis c/ + insecticides	820	970	1.1	.5	.6	530
Endosulfan + methyl parathion	400	720	1.8	.4 .1	.7 .4	290 140

-- continued

Table B5. Cabbage: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : average : : Total
<u>Tank-mixes (cont'd)</u>						
Maneb	200	870	4.3	1.5	6.9	1,390
+ methamidophos				.9	3.9	780
Maneb	130	1,520	11.6	1.6	18.7	2,440
+ permethrin				.2	2.6	340
Methamidophos	670	1,020	1.5	1.6	2.4	1,670
+ insecticides						
Methomyl	810	1,070	1.3	2.0	2.7	2,240
+ insecticides						
Methyl parathion	420	840	2.0	.7	1.5	630
+ toxaphene				.7	1.5	630
Parathion	330	950	2.8	.9	2.6	880
+ toxaphene				.7	2.2	740
Other	-	780	-	1.7	-	1,360
Total	-	14,550	-	1.3	-	20,140
TOTAL PESTICIDES	-	250,330	-	1.1	-	295,630

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table C1. Cantaloups: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 ^{a/}

Pesticides	: Acres treated : b/	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Benefin	130	130	1.0	0.6	0.6	90
Bensulide	50	50	1.0	3.4	3.4	170
Other	-	990	-	1.1	-	1,100
Total	-	1,170	-	1.1	-	1,360
<u>Insecticides</u>						
Carbaryl	230	260	1.1	0.7	0.8	190
Methomyl	970	3,480	3.5	0.4	1.6	1,560
Parathion	20	20	1.0	-	-	-
Other	-	430	-	0.7	-	330
Total	-	4,190	-	0.4	-	2,080
<u>Fungicides</u>						
Chlorothalonil	1,710	6,070	3.5	1.3	4.8	8,310
Folpet	280	460	1.6	0.2	0.4	120
Maneb	140	190	1.3	3.0	4.1	580
Other	-	690	-	0.8	-	580
Total	-	7,410	-	1.2	-	9,590
<u>Tank mixtures</u>						
Benomyl	100	100	1.0	1.5	1.5	150
+ chlorothalonil	-	-	-	1.2	1.2	120
Other	-	40	-	4.7	-	190
Total	-	140	-	3.2	-	460
TOTAL PESTICIDES	-	12,910	-	1.0	-	13,490

^{a/} 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

^{b/} Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

Table C2. Cantaloups: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per time : : applied :	: Annual : : average :	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	1,130	2,080	1.8	1.4	2.6	2,970
Chloramben	180	180	1.0	.8	.8	160
Naptalam	440	440	1.0	1.7	1.7	770
Trifluralin	830	830	1.0	.4	.4	380
Other	-	520	-	2.7	-	1,430
Total	-	4,050	-	1.8	-	5,710
<u>Insecticides</u>						
Carbaryl	2,290	9,550	4.1	.6	2.8	6,570
Demeton	200	490	2.4	.3	.7	150
Dicofol	150	440	2.9	.3	1.0	150
Endosulfan	1,120	4,950	4.4	.4	2.0	2,310
Malathion	430	690	1.6	1.0	1.7	740
Methoxychlor	240	520	2.1	.6	1.3	330
Parathion	270	430	1.5	-	.1	40
Other	-	1,460	-	3.0	-	4,460
Total	-	18,530	-	.7	-	14,750
<u>Fungicides</u>						
Benomyl	460	2,230	4.8	.2	1.1	550
Captafol	530	2,540	4.7	1.5	7.2	3,840
Chlorothalonil	2,020	8,340	4.1	.8	3.7	7,500
Copper hydroxide	650	1,680	2.5	1.1	2.8	1,870
Mancozeb	340	910	2.6	1.4	3.8	1,310
Maneb	470	2,470	5.2	1.5	8.3	3,920
Other	-	1,640	-	.9	-	1,490
Total	-	19,810	-	1.0	-	20,480
<u>Nematicides</u>						
D-D	10	10	1.0	28.0	28.0	280
Ethylene dibromide	620	620	1.0	19.6	19.6	12,190
Total	-	630	-	19.7	-	12,470
<u>Tank mixtures</u>						
<u>Alanap</u>						
+ insecticides						
+ fungicides	270	390	1.4	11.8	17.1	4,620
<u>Azinphosmethyl</u>						
+ fungicides						
+ insecticides	180	270	1.5	2.4	3.7	670

- continued

Table C2. Cantaloups: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :		: Total
				: Per time : applied :	: Annual : average :	
Tank mixtures (cont'd)						
Benomyl	160	320	2.0	.2	.5	80
+ chlorothalonil				.5	.9	150
Benomyl						
+ insecticides						
+ fungicides	50	140	2.8	1.8	5.2	260
Captafol	40	70	1.7	1.4	2.5	100
+ maneb				1.7	3.0	120
Carbaryl						
+ fungicides						
+ insecticides	480	1,890	3.9	1.9	7.6	3,650
Chlorothalonil	190	930	4.8	1.8	8.8	1,680
+ endosulfan				.5	2.5	470
Copper compounds						
+ insecticides						
+ fungicides	210	680	3.2	3.5	11.3	2,380
Dichlone	70	70	1.0	.1	.1	10
+ sulfur				1.6	1.6	110
Metallic copper	160	220	1.3	-	.1	20
+ sulfur				1.1	1.4	230
Naptalam	130	130	1.0	1.8	1.8	240
+ bensulide				4.8	4.8	620
Sulfur	40	40	1.0	1.0	1.0	40
+ zineb				1.0	1.0	40
Other	-	580	-	2.0	-	1,180
Total	-	5,730	-	2.9	-	16,670
TOTAL PESTICIDES	-	48,750	-	1.4	-	70,080

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table C3. Cantaloups: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	4,880	5,740	1.1	4.0	4.7	23,150
Trifluralin	5,350	5,670	1.0	.5	.6	3,280
Other	-	110	-	.8	-	90
Total	-	11,520	-	2.3	-	26,520
<u>Insecticides</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>	860	2,380	2.7	-	-	-
Diazinon	520	520	1.0	1.9	1.9	990
Dicofol	1,770	1,770	1.0	.9	.9	1,620
Dimethoate	5,630	14,020	2.4	.3	.8	4,900
Methomyl	4,130	12,570	3.0	.5	1.7	7,200
Mevinphos	420	1,250	2.9	.2	.6	280
Parathion	1,860	3,040	1.6	.7	1.2	2,330
Other	-	6,790	-	1.1	-	7,660
Total	-	42,340	-	.5	-	24,980
<u>Fungicides</u>						
Benomyl	5,250	11,200	2.1	1.6	3.5	18,590
Captafol	1,050	4,180	3.9	1.7	6.9	7,340
Chlorothalonil	730	2,700	3.6	.6	2.4	1,760
Copper sulfate	170	170	1.0	.8	.8	140
Folpet	2,480	6,540	2.6	1.7	4.6	11,620
Maneb	6,910	33,430	4.8	1.4	6.7	46,900
Other	-	20	-	1.0	-	20
Total	-	58,240	-	1.4	-	86,370
<u>Nematicides</u>						
D-D	1,080	1,080	1.0	35.9	35.9	38,860
<u>Tank-mixes</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u> + oils	1,100	1,100	1.0	-	-	-
				.1	.1	70
Benomyl + dicofol	470	470	1.0	.2	.2	120
				.6	.6	300
Benomyl + folpet	530	530	1.0	.5	.5	310
				.9	.9	500

-- continued

Table C3. Cantaloups: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ -- continued

Pesticides	: Acres :	: Acre- : treated :	: treatments :	: Times : applied :	: Pounds of active ingredient		
					: Per acre :	: Per time : applied :	: Annual : average : Total :
<u>Tank-mixes (cont'd)</u>							
Benomyl	390	770		1.9	.2	.4	190
+ maneb					.4	.8	310
+ mevinphos					.1	.2	90
Chlorothalonil	130	130		1.0	.9	.9	120
+ methyl parathion					.5	.5	70
Dicofol	500	1,490		2.9	.1	.5	280
+ toxaphene					.1	.2	80
Methyl parathion	470	470		1.0	3.0	3.0	1,410
+ parathion					6.0	6.0	2,820
Naptalam	100	100		1.0	1.0	1.0	100
+ chloramben					.4	.4	50
Other	-	440		-	1.7	-	750
Total	-	5,500		-	1.3	-	7,570
TOTAL PESTICIDES	-	118,680		-	1.5	-	184,300

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table D1. Carrots: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres treated : b/	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per time applied :	: Per acre Annual average :	: Total :
<u>Single applications</u>						
<u>Herbicides c/</u>						
Linuron	460	850	1.8	.7	1.3	640
Other	-	60	-	.8	-	50
Total	-	910	-	.8	-	690
<u>Insecticides</u>						
Parathion	400	1,120	2.8	.5	1.6	660
Other	-	40	-	1.0	-	40
Total	-	1,160	-	.6	-	700
<u>Fungicides</u>						
Chlorothalonil	10	30	3.0	.6	2.0	20
Other	-	10	-	1.0	-	10
Total	-	40	-	.7	-	30
<u>Tank-mixes</u>						
Carbaryl + mancozeb	40	200	5.0	.8	4.0	160
				.5	2.5	100
Maneb + parathion	330	1,000	3.0	1.6	4.8	1,600
				.4	1.3	440
Other	-	10	-	1.0	-	10
Total	-	1,210	-	1.9	-	2,310
TOTAL PESTICIDES	-	3,320	-	1.1	-	3,730

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Excludes 23,340 gallons of mineral spirits used in 444 acre-treatments.

Table D2. Carrots: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
<u>Single applications</u>						
<u>Herbicides c/</u>						
Linuron	12,370	26,010	2.1	1.3	2.7	34,170
Nitrofen	1,180	2,090	1.7	1.7	3.0	3,610
Other	-	620	-	4.4	-	2,740
Total	-	28,720	-	1.4	-	40,520
<u>Insecticides</u>						
Carbaryl	3,700	18,560	5.0	1.0	5.4	20,270
Diazinon	4,270	19,390	4.5	.4	1.9	8,390
Malathion	390	1,160	2.9	.6	2.0	810
Methomyl	300	3,600	12.0	.4	5.4	1,620
Methyl parathion	360	1,810	5.0	.1	.6	230
Parathion	5,000	27,530	5.5	.2	1.4	7,420
Other	-	2,100	-	2.0	-	4,280
Total	-	74,150	-	.5	-	43,020
<u>Fungicides</u>						
Chlorothalonil	4,170	22,030	5.2	1.6	8.5	35,590
Copper sulfate	260	730	2.8	.2	.7	190
Mancozeb	1,720	16,740	9.7	1.5	15.2	26,250
Maneb	2,370	8,100	3.4	1.1	4.0	9,690
Other	-	310	-	1.6	-	520
Total	-	47,910	-	1.5	-	72,240
<u>Nematicides</u>						
D-D	930	930	1.0	385.2	385.2	358,280
<u>Tank mixtures</u>						
Carbaryl	180	1,050	5.8	.5	3.1	560
+ copper complexes				2.0	11.7	2,100
Carbaryl	70	790	11.2	1.4	16.2	1,140
+ mancozeb				.3	3.0	210
Carbaryl						
+ fungicides						
+ insecticides	2,100	9,800	4.6	3.2	15.3	32,230
Chlorothalonil	760	7,610	10.0	.4	4.5	3,460
+ copper sulfate				.1	.9	690
+ mancozeb				1.6	16.0	12,180

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Table D2. Carrots: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : applied :	: Annual : average : Total
<u>Tank mixtures (cont'd)</u>						
Chlorothalonil + methomyl	1,490	2,980	2.0	1.5 .2	3.0 .5	4,470 670
Chlorothalonil + methoxychlor + parathion	1,170	5,870	5.0	.4 .5 .1	2.2 2.5 .4	2,670 2,930 500
Chlorothalonil + parathion	1,520	6,050	3.9	1.5 .5	6.0 2.0	9,140 3,020
Copper sulfate + diazinon + mancozeb	1,140	5,710	5.0	.9 .5 1.2	.4 2.5 6.0	510 2,850 6,850
Diazinon + methoxychlor	760	3,810	5.0	.4 .4	2.5 2.5	1,900 1,900
Metallic copper + sulfur	360	1,450	4.0	.3 .3	1.4 1.4	520 520
Parathion + mancozeb	800	4,790	5.9	.1 .4	.5 2.4	410 1,950
Telone + Vorlex	950	950	1.0	114.9 20.3	114.9 20.3	109,160 19,260
Total	-	50,860	-	4.3	-	221,800
TOTAL PESTICIDES	-	202,570	-	7.3	-	735,860

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Excluded 767,400 gallons of mineral spirits used in 12,000 acre-treatments.

Table D3. Carrots: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : applied :	: Annual : average : Total
<u>Single applications</u>						
<u>Herbicides c/</u>						
Linuron	6,780	8,700	1.2	1.0	1.3	9,170
Profluralin	390	390	1.0	.3	.3	120
Trifluralin	4,330	4,330	1.0	.5	.5	2,350
Total	-	13,420	-	.9	-	11,640
<u>Insecticides</u>						
Carbaryl	150	150	1.0	.8	.8	120
Diazinon	160	300	1.8	.5	.9	150
Other	-	440	-	.2	-	110
Total	-	890	-	.4	-	380
<u>Fungicides</u>						
Zineb	170	170	1.0	1.2	1.2	210
<u>Rodenticides</u>						
	60	190	4.8	-	-	-
<u>Tank-mixes</u>						
Fonofos	100	100	1.0	.4	.4	40
+ trifluralin				.2	.2	30
TOTAL PESTICIDES	-	14,770	-	.8	-	12,300

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Excludes 3,990 gallons of mineral spirits used for 271 acre-treatments.

Table D4. Carrots: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
Single applications						
Herbicides						
Linuron	5,130	8,590	1.6	.8	1.3	7,040
Nitrofen	330	460	1.3	.4	.6	220
Trifluralin	6,610	7,950	1.2	.7	.9	6,040
Other	-	120	-	5.0	-	600
Total	-	17,120	-	.8	-	13,900
Insecticides						
Bacillus						
<u>thuringiensis c/</u>	60	420	7.0	-	-	-
Diazinon	2,120	2,310	1.0	.7	.8	1,810
Methomyl	1,260	2,460	1.9	.4	.8	1,110
Parathion	1,080	1,930	1.7	.9	1.7	1,850
Toxaphene	1,250	1,250	1.0	1.0	1.0	1,250
Other	-	1,530	-	.6	-	920
Total	-	9,900	-	.7	-	6,940
Fungicides						
Maneb	8,500	35,620	4.1	1.4	6.2	53,020
Other	-	170	-	4.1	-	710
total	-	35,790	-	1.5	-	53,730
Nematicides						
D-D	860	860	1.0	57.8	57.8	49,780
Ethylene dibromide	1,250	1,250	1.0	51.1	51.1	63,990
Total	-	2,110	-	53.9	-	113,770
Tank-mixes						
Atrazine	180	360	2.0	4.1	8.2	1,480
+ linuron				.8	1.6	300
+ parathion				.2	.4	90
+ toxaphene				.3	.6	130
Copper hydroxide	560	1,450	2.5	8.2	21.4	11,990
+ sulfur				4.7	12.2	6,830

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Table D4. Carrots: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ -- continued

Pesticides	: Acres :	: Acre- : treated:	: treatments:	: Times : applied	: Pounds of active ingredient		: Total
					: Per acre	: Annual	
	: <u>b/</u>	:	:	:	: applied	: average	:

Tank-mixes (cont'd)

Monosodium methane arsenate + prometryne	260	260	1.0	.4	.4	120
				.1	.1	30
Other	-	70	-	1.4	-	100
Total	-	2,140	-	9.8	-	21,070
TOTAL PESTICIDES	-	67,060	-	3.1	-	209,410

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table E1. Celery: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
<u>Single applications</u>						
<u>Herbicides</u>						
CDEC	640	640	1.0	3.8	3.8	2,460
Nitrofen	700	3,050	4.3	.5	2.2	1,560
Other	-	90	-	1.1	-	100
Total	-	3,780	-	1.0	-	4,120
<u>Insecticides</u>						
Azinphosmethyl	430	1,700	3.9	.4	1.9	840
Demeton	620	2,150	3.4	.2	.8	530
Endosulfan	390	930	2.3	.7	1.7	680
Methomyl	500	2,180	4.3	.1	.8	430
Parathion	630	2,700	4.2	.5	2.4	1,560
Other	-	910	-	.3	-	320
Total	-	10,570	-	.4	-	4,360
<u>Fungicides</u>						
Anilazine	620	2,100	3.3	1.4	4.7	2,950
Benomyl	200	1,600	8.0	.5	4.0	800
Chlorothalonil	640	3,350	5.2	1.1	5.8	3,760
Maneb	80	550	6.8	1.6	11.1	890
Total	-	7,600	-	1.1	-	8,400
<u>Tank-mixes</u>						
Chloropicrin + D-D	60	60	1.0	37.5 212.5	37.5 212.5	2,250 12,750
Other	-	20	-	1.5	-	30
Total	-	80	-	187.8	-	15,030
TOTAL PESTICIDES	-	22,030	-	1.4	-	31,910

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table E2. Celery: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
				: Per time	: applied	: average
Single applications						
Herbicides						
CDA	2,790	2,790	1.0	1.3	1.3	3,780
CDEC	7,850	7,850	1.0	3.0	3.0	24,290
Nitrofen	2,400	2,400	1.0	1.0	1.0	2,400
Prometryne	1,170	2,340	2.0	0.1	0.3	370
Total	-	15,380	-	2.0	-	30,840
Insecticides						
Bacillus						
<u>thuringiensis</u> c/	3,300	15,000	4.5	-	-	-
Methomyl	1,170	11,700	10.0	0.8	8.1	9,480
Naled	2,030	16,200	7.9	0.4	3.6	7,470
Oxamyl	3,200	52,200	16.3	0.4	7.8	25,210
Permethrin	9,260	72,980	7.8	0.1	0.8	8,200
Total	-	168,080	-	0.2	-	50,360
Fungicides						
Benomyl	2,400	7,200	3.0	0.2	0.7	1,800
Chlorothalonil	7,950	91,540	11.5	0.6	7.4	58,940
Copper hydroxide	4,160	66,100	15.8	1.5	25.3	105,630
Mancozeb	1,800	9,630	5.3	1.0	5.7	10,370
Maneb	6,150	75,970	12.3	0.7	9.1	56,420
Sulfur	1,170	17,550	15.0	0.7	11.7	13,690
Total	-	267,990	-	0.9	-	246,850
Tank mixtures						
CDA	2,130	2,130	1.0	4.0	4.0	8,530
+ CDEC				4.0	4.0	8,530
Total	-	2,130	-	8.0	-	17,060
TOTAL PESTICIDES	-	453,580	-	0.7	-	345,110

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table E3. Celery: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average :
	: b/ :					: Total
<u>Single applications</u>						
<u>Herbicides</u>						
CDEC	1,880	2,040	1.0	2.6	2.8	5,430
Nitrofen	290	460	1.5	1.3	2.0	600
Prometryn	2,640	5,420	2.0	3.1	6.5	17,280
Other	-	850	-	2.0	-	1,760
Total	-	8,770	-	2.8	-	25,070
<u>Insecticides</u>						
Acephate	940	3,240	3.4	.5	1.7	1,620
<u>Bacillus thuringiensis c/</u>	1,220	5,380	4.4	-	-	-
Diazinon	420	830	1.9	.4	.9	390
Endosulfan	1,080	3,700	3.4	.4	1.6	1,760
Malathion	640	2,260	3.5	1.2	4.4	2,820
Mevinphos	1,080	4,020	3.7	.3	1.3	1,480
Oxamyl	1,260	2,260	1.7	.5	.9	1,230
Parathion	1,550	3,720	2.4	.4	1.1	1,850
Other	-	2,730	-	.3	-	850
Total	-	27,640	-	.4	-	12,000
<u>Fungicides</u>						
Anilazine	1,910	7,500	3.9	1.0	4.2	8,040
Benomyl	80	160	2.0	.2	.5	40
Copper hydroxide	360	2,780	7.7	1.8	14.4	5,190
Mancozeb	1,250	6,050	4.8	.1	.8	1,070
Other	-	12,110	-	1.1	-	13,550
Total	-	28,600	-	1.1	-	34,300
<u>Nematicides</u>						
Oxamyl	130	200	1.5	.6	1.0	130
<u>Tank mixtures</u>						
Acephate						
+ fungicides	360	510	1.4	1.7	2.4	880
Azinphosmethyl						
+ fungicides						
+ insecticides	340	1,120	3.2	1.7	5.8	1,980
<u>Bacillus thuringiensis c/</u>						
+ fungicides						
+ insecticides	1,030	1,230	1.1	.8	.9	1,020
<u>Bacillus thuringiensis c/</u>						
+ ethylan	80	480	6.0	.2	.9	70

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Table E3. Celery: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : treated : b/	: Acre- : treatments	: Times : applied	: Pounds of active ingredient		
				: Per acre	: Per time : applied	: Annual : average
<u>Tank mixtures (cont'd)</u>						
CDEC	630	940	1.4	4.0	6.0	3,810
+ D-D				136.6	203.9	128,430
+ malathion				.9	1.3	810
+ prometryn				1.1	1.6	1,020
Chlorothalonil	850	4,390	5.1	2.0	10.7	9,170
+ methomyl				.2	1.0	830
Chlorothalonil	330	1,390	4.2	.9	3.9	1,310
+ mevinphos				.4	1.5	500
Chlorothalonil + fungicides + insecticides	4,970	9,030	1.8	1.7	3.1	15,870
Copper compounds + fungicides + insecticides	1,850	3,440	1.8	2.2	4.1	7,620
Copper hydroxide + anilazine + mancozeb	110	1,120	10.1	4.1 2.0 3.2	42.3 20.5 32.6	4,660 2,250 3,590
Demeton + fungicides + insecticides	520	1,170	2.2	1.0	2.3	1,210
Diazinon + fungicides + insecticides	700	2,240	3.2	1.0	3.2	2,250
Endosulfan + insecticides	320	730	2.2	.9	2.0	660
Other	-	2,570	-	1.8	-	4,870
Total	-	30,360	-	6.3	-	192,810
TOTAL PESTICIDES	-	95,570	-	2.7	-	264,310

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table F1. Cucumbers: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
Single applications						
Herbicides						
Bensulide	170	170	1.0	2.8	2.8	480
Naptalam	130	130	1.0	2.6	2.6	340
Other	-	10	-	1.0	-	-
Total	-	310	-	2.6	-	830
Insecticides						
Azinphosmethyl	100	170	1.7	.5	.9	90
Carbaryl	130	130	1.0	.6	.6	90
Endosulfan	260	540	2.0	.5	1.0	280
Other	-	20	-	.5	-	10
Total	-	860	-	.5	-	470
Fungicides						
Chlorothalonil	280	670	2.3	1.8	4.3	1,220
Mancozeb	100	130	1.3	2.0	2.7	270
Other	-	40	-	3.2	-	130
Total	-	840	-	1.9	-	1,620
Tank-mixes						
Naptalam + bensulide	1,200	1,200	1.0	2.2	2.2	2,700
				4.2	4.2	4,990
Other	-	280	-	1.7	-	480
Total	-	1,480	-	5.5	-	8,170
TOTAL PESTICIDES	-	3,490	-	3.1	-	11,090

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table F2. Cucumbers: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per time : : applied :	: Per acre : : average :	: Annual : : Total :
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	5,650	6,050	1.0	1.6	1.7	10,040
Naptalam	3,570	3,570	1.0	1.9	1.9	6,870
Other	-	1,430	-	.7	-	1,010
Total	-	11,050	-	1.6	-	17,920
<u>Insecticides</u>						
Carbaryl	5,210	19,220	3.6	0.9	3.4	18,070
Lindane	860	3,330	3.8	0.2	1.0	940
Methomyl	1,210	2,630	2.1	0.9	2.0	2,470
Other	-	370	-	1.2	-	460
Total	-	25,550	-	0.8	-	21,940
<u>Fungicides</u>						
Chlorothalonil	2,110	4,220	2.0	1.8	3.7	7,840
Difolatan	670	1,200	1.7	1.7	3.0	2,070
Maneb	1,300	4,370	3.3	1.4	4.8	6,280
Other	-	350	-	0.6	-	240
Total	-	10,140	-	1.6	-	16,430
<u>Nematicides</u>						
D-D	300	300	1.0	18.0	18.0	5,400
Total	-	300	-	18.0	-	5,400
<u>Tank mixtures</u>						
Benomyl	420	4,050	9.6	0.4	4.8	2,020
+ methomyl				0.4	4.4	1,860
Bensulide	350	350	1.0	3.3	3.3	1,170
+ naptalam				1.6	1.6	590
Disulfoton						
+ nematicides	1,760	1,760	1.0	0.9	0.9	1,710
Lindane	1,250	1,250	1.0	1.2	1.2	1,500
+ maneb				0.2	0.2	350
Naptalam						
+ herbicides	170	170	1.0	1.8	8	320
Other	-	390	-	2.4	-	940
Total	-	7,970	-	1.3	-	10,460
TOTAL PESTICIDES	-	55,010	-	1.3	-	72,150

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

Table F3. Cucumbers: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : applied :	: Annual : average : : Total :
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	8,580	8,590	1.0	3.4	3.4	29,870
Chloramben	2,260	2,310	1.0	1.5	1.5	3,560
Naptalam	11,280	11,280	1.0	2.0	2.0	22,830
Other	-	430	-	.6	-	290
Total	-	22,610	-	2.5	-	56,550
<u>Insecticides</u>						
Carbaryl	8,080	14,100	1.7	.9	1.6	13,240
Diazinon	3,080	3,080	1.0	.9	.9	2,870
Endosulfan	1,770	2,850	1.6	.6	1.0	1,850
Other	-	1,330	-	1.4	-	1,940
Total	-	21,360	-	.9	-	19,900
<u>Fungicides</u>						
Chlorothalonil	2,020	3,140	1.5	1.2	1.9	3,940
Copper hydroxide	830	2,470	2.9	1.5	4.5	3,760
Copper sulfate	1,990	5,980	2.0	1.2	2.5	7,480
Mancozeb	420	1,780	4.2	2.2	9.7	4,080
Maneb	390	770	1.9	1.7	3.4	1,360
Other	-	740	-	2.4	-	1,830
Total	-	14,880	-	1.5	-	22,450
<u>Tank mixtures</u>						
Bensulide	100	100	1.0	4.0	4.0	400
+ alachlor				1.4	1.4	140
Carbaryl						
+ fungicides						
+ insecticides	670	1,290	1.9	2.6	5.1	3,420
Chlorothalonil						
+ fungicides						
+ insecticides	290	410	1.4	2.9	4.1	1,210
Copper compounds						
+ fungicides						
+ insecticides	940	1,240	1.3	1.6	2.1	2,050
Metribuzin	20	20	1.0	.5	.5	10
+ trifluralin				.5	.5	0
Naptalam	8,870	8,870	1.0	2.1	2.1	19,300
+ bensulide				3.9	3.9	34,590

-- continued

Table F3. Cucumbers: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : b/ : : treated :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per time : applied :	: Annual : average :	: Total
<u>Tank mixtures (cont'd)</u>						
Naptalam	90	90	1.0	1.0	1.0	90
+ bensulide				2.0	2.0	180
+ dinoseb				.6	.6	50
Naptalam	3,520	3,520	1.0	.8	.8	2,930
+ chloramben				.5	.5	1,760
Naptalam	60	60	1.0	.5	.5	30
+ dinoseb				.2	.2	10
Other	-	630	-	2.3	-	1,510
Total	-	16,230	-	4.1	-	67,690
TOTAL PESTICIDES	-	75,080	-	2.2	-	166,590

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table F4. Cucumbers: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres treated : b/	: Acre-treatments :	: Times applied :	:Pounds of active ingredient		
				: Per acre :	: Per time :	: Annual average :
						Total
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	160	160	1.0	4.4	4.4	710
Naptalam	150	150	1.0	1.6	1.6	240
Total	-	310	-	3.0	-	950
<u>Insecticides</u>						
Carbaryl	170	190	1.1	2.4	2.7	470
Methomyl	100	300	3.0	.4	1.3	130
Mevinphos	90	170	1.8	.2	.4	40
Other	-	590	-	.3	-	210
Total	-	1,250	-	.6	-	850
<u>Fungicides</u>						
Copper sulfate	400	720	1.8	1.1	2.0	820
Mancozeb	60	190	3.1	.8	2.6	160
Maneb	330	1,190	3.6	1.3	5.0	1,650
Other	-	110	-	3.2	-	360
Total	-	2,210	-	1.3	-	2,990
<u>Nematicides</u>						
D-D	100	100	1.0	35.7	35.7	3,570
<u>Tank-mixes</u>						
Copper sulfate + mancozeb	10	10	1.0	1.0	1.0	10
				2.0	2.0	20
Total	-	10	-	3.0	-	30
TOTAL PESTICIDES	-	3,880	-	2.1	-	8,390

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table G1. Green peas: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

	:	:	:	:Pounds of active ingredient			
				: Acres	: Acre-	: Times	: Per acre
Pesticides	:	b/	:	:	:	:	:
	:	treated:	treatments:	applied	:Per time	: Annual	: Total
	:	:	:	:	:applied	: average	:
<u>Single applications</u>							
<u>Herbicides</u>							
Dinoseb	2,900	2,900	1.0	1.4	1.4	4,220	
Trifluralin	2,040	2,040	1.0	.5	.5	1,020	
Other	-	10	-	1.0	-	10	
Total	-	4,950	-	1.0	-	5,250	
<u>Tank-mixes</u>							
Dinoseb	40	40	1.0	1.2	1.2	50	
+ trifluralin				.3	.3	10	
Total	-	40	-	1.5	-	60	
TOTAL PESTICIDES	-	4,990	-	1.0	-	5,310	

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table G2. Green peas: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Alachlor	4,440	4,440	1.0	1.6	1.6	7,170
Dalapon	14,090	14,090	1.0	.7	.7	10,330
Dinoseb	1,000	1,000	1.0	1.5	1.5	1,550
MCPA	13,430	13,430	1.0	.2	.2	3,640
Oryzalin	2,520	2,520	1.0	.7	.7	1,890
Profluralin	4,110	4,110	1.0	.7	.7	3,190
Trifluralin	84,680	88,540	1.0	.4	.4	40,710
4-MCPB	64,600	64,600	1.0	.6	.6	39,880
Other	-	2,840	-	1.4	-	4,030
Total	-	195,570	-	.5	-	112,390
<u>Insecticides</u>						
Dimethoate	1,880	1,880	1.0	.1	.1	260
Methomyl	67,410	121,980	1.8	.4	.8	56,590
Parathion	7,670	8,120	1.0	.3	.3	2,930
Other	-	190	-	.1	-	20
Total	-	132,170	-	.4	-	59,800
<u>Tank mixtures</u>						
MCPA	6,230	6,230	1.0	c/	c/	260
+ 4-MCPB				.5	.5	3,120
Oryzalin	7,410	7,410	1.0	.7	.7	5,700
+ trifluralin				.5	.5	3,700
Other	-	210	-	2.0	-	430
Total	-	13,850	-	.9	-	13,210
TOTAL PESTICIDES	-	341,590	-	.5	-	185,400

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Less than 0.05 pounds per acre.

Table G3. Green peas: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres treated:	: Acre-treatments:	: Times applied:	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
	: b/	:	:	: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Dalapon	1,070	1,070	1.0	0.8	0.8	910
Diallate	2,670	2,900	1.0	1.2	1.3	3,590
Dinoseb	35,640	46,220	1.2	2.1	2.8	101,110
Glyphosate	490	490	1.0	.8	.8	440
MCPA	3,190	3,190	1.0	.3	.3	1,220
Trifluralin	23,380	27,530	1.1	.5	.5	13,920
Other	-	2,520	-	1.2	-	3,170
Total	-	83,920	-	1.4	-	124,360
<u>Insecticides</u>						
<u>Bacillus</u>						
<u>thuringiensis</u> <u>c/</u>	24,890	24,890	1.0	-	-	-
Carbaryl	9,670	9,670	1.0	.9	.9	8,780
Dimethoate	8,640	8,640	1.0	.2	.2	2,230
Imidan	1,240	1,600	1.2	.5	.6	800
Malathion	2,450	2,450	1.0	.9	.9	2,430
Methomyl	6,870	6,870	1.0	.4	.4	2,930
Methyl parathion	5,520	5,520	1.0	.4	.4	2,340
Parathion	14,750	30,610	2.0	.9	1.9	29,190
Toxaphene	650	650	1.0	1.4	1.4	970
Other	-	2,980	-	.7	-	2,160
Total	-	93,880	-	.5	-	51,830
<u>Tank-mixes</u>						
Methyl parathion + parathion	11,540	24,630	2.1	.8 1.7	1.8 3.7	21,530 43,060
Total	-	24,630	-	2.6	-	64,590
TOTAL PESTICIDES	-	202,430	-	1.1	-	240,780

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table H1. Lettuce: Acres treated, acre treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	2,480	2,480	1.0	4.9	4.9	12,380
CDEC	1,860	1,870	1.0	2.2	2.2	4,150
Pronamide	700	700	1.0	1.4	1.4	980
Other	-	330	-	3.3	-	1,110
Total	-	5,380	-	3.4	-	18,620
<u>Insecticides</u>						
Acephate	420	910	2.1	.8	1.8	770
<u>Bacillus</u> <u>thuringiensis</u> c/	2,170	3,400	1.5	-	-	-
Diazinon	550	1,240	2.2	.5	1.3	740
Dimethoate	140	500	3.5	.2	1.0	140
Methomyl	1,380	12,960	9.3	.4	4.2	5,870
Mevinphos	1,810	5,990	3.3	.8	2.7	4,900
Parathion	1,570	3,100	1.9	.7	1.5	2,450
Other	-	780	-	.8	-	690
Total	-	28,880	-	.5	-	15,560
<u>Fungicides</u>						
Benomyl	240	380	1.5	.8	1.4	340
Maneb	460	1,120	2.4	1.6	3.9	1,810
Other	-	940	-	1.5	-	1,440
Total	-	2,440	-	1.4	-	3,590
<u>Tank-mixes</u>						
<u>Bacillus</u> <u>thuringiensis</u> c/ + fungicides + insecticides						
	1,600	10,100	6.3	1.9	12.1	19,370
Diazinon + maneb	860	4,300	5.0	.5 2.4	2.5 12.0	2,150 10,310
Other	-	260	-	1.6	-	420
Total	-	14,660	-	2.1	-	32,250
TOTAL PESTICIDES	-	51,360	-	1.3	-	70,020

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table H2. Lettuce: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre : : Per time : : applied :	: Annual : : average :	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
CDEC	9,560	15,710	1.6	3.6	6.0	57,880
Paraquat	7,580	9,390	1.2	0.4	0.5	4,020
Total	-	25,100	-	2.4	-	61,900
<u>Insecticides</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>	2,560	13,830	5.4	-	-	-
Dimethoate	1,530	8,510	5.5	0.4	2.2	3,410
Methomyl	6,640	17,660	2.6	0.2	0.7	4,880
Permethrin	4,880	53,590	10.9	-	0.9	4,770
Phosdrin	1,070	4,130	3.8	0.4	1.8	1,980
Toxaphene	3,810	9,510	2.4	1.8	4.5	17,360
Other	-	1,250	-	0.4	-	560
Total	-	108,480	-	0.3	-	32,960
<u>Fungicides</u>						
Copper hydroxide	680	4,050	5.9	0.8	4.9	3,360
Mancozeb	5,020	25,820	5.1	1.3	7.1	35,850
Maneb	990	11,340	11.4	0.4	4.5	4,550
Other	-	190	-	1.8	-	350
Total	-	41,400	-	1.0	-	44,110
<u>Tank mixtures</u>						
Methyl parathion + parathion	320	720	2.2	0.2 0.5	0.6 1.2	200 400
Total	-	720	-	0.8	-	600
TOTAL PESTICIDES	-	175,700	-	0.7	-	139,570

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table H3. Lettuce: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
<u>Single applications</u>						
<u>Herbicides</u>						
CDEC	1,450	2,960	2.0	3.7	7.6	11,050
Other	-	220	-	.6	-	140
Total	-	3,180	-	3.5	-	11,190
<u>Insecticides</u>						
Malathion	130	230	1.7	2.0	3.6	470
Methomyl	1,310	6,030	4.6	.8	3.7	4,930
Mevinphos	1,550	3,580	2.3	.2	.6	990
Parathion	1,110	6,590	5.9	.5	3.0	3,350
Other	-	120	-	1.1	-	140
Total	-	16,550	-	.5	-	9,880
<u>Fungicides</u>						
Maneb	1,310	5,480	4.1	.5	2.4	3,180
Other	-	180	-	1.2	-	230
Total	-	5,660	-	.6	-	3,410
<u>Tank mixtures</u>						
<u>Bacillus</u>						
<u>thuringiensis d/</u> + oils	150	300	2.0	-	-	-
				.1	-	10
Other	10	10	1.0	1.0	1.0	10
Total	-	310	-	-	.6	20
TOTAL PESTICIDES	-	25,700	-	.9	-	24,500

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table H4. Lettuce: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres treated : b/	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Pronamide	250	250	1.0	0.8	0.8	210
Other	-	40	-	1.7	-	70
Total	-	290	-	.9	-	280
<u>Insecticides</u>						
Demeton	110	210	1.9	.2	.5	60
Endosulfan	670	1,190	1.7	.6	1.1	740
Parathion	130	300	2.3	.7	1.6	220
Other	-	100	-	1.3	-	130
Total	-	1,800	-	.6	-	1,150
<u>Fungicides</u>						
Captan	160	170	1.0	1.8	1.9	310
<u>Tank-mixes</u>						
Endosulfan	50	50	1.0	1.0	1.0	50
+ meta-systox				.2	.2	10
Total	-	50	-	1.2	-	60
TOTAL PESTICIDES	-	2,310	-	.7	-	1,800

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table H5. Lettuce: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average : Total
<u>Single applications</u>						
<u>Herbicides</u>						
Benefin	13,840	14,210	1.0	0.9	0.9	13,680
Bensulide	2,810	2,960	1.0	4.6	4.8	13,720
Pronamide	5,700	5,700	1.0	1.0	1.0	5,900
Propham	1,620	1,620	1.0	2.6	2.6	4,300
Trifluralin	560	890	1.5	.6	.9	550
Other	-	410	-	3.7	-	1,530
Total	-	25,790	-	1.5	-	39,680
<u>Insecticides</u>						
Acephate	5,200	12,790	2.4	.9	2.3	12,380
<u>Bacillus</u>						
<u>thuringiensis c/</u>	8,060	19,700	2.4	-	-	-
Carbaryl	1,330	3,990	3.0	1.9	5.8	7,730
Diazinon	2,240	4,050	1.8	.5	.9	2,230
Dimethoate	1,270	1,270	1.0	.2	.2	370
Endosulfan	4,410	6,850	1.5	.9	1.4	6,370
Methomyl	11,050	34,880	3.1	.6	1.9	21,650
Mevinphos	6,770	18,390	2.7	.8	2.2	15,270
Parathion	2,540	6,660	2.6	.7	2.0	5,190
Permethrin	4,570	8,470	1.8	.1	.3	1,550
Toxaphene	1,360	1,360	1.0	1.3	1.3	1,830
Other	-	1,900	-	2.4	-	4,650
Total	-	120,310	-	.6	-	79,220
<u>Fungicides</u>						
Chlorothalonil	440	440	1.0	1.4	1.4	620
Maneb	5,620	15,150	2.6	1.5	4.2	23,830
Phorate	770	770	1.0	.9	.9	750
Other	-	480	-	1.1	-	530
Total	-	16,840	-	1.5	-	25,730
<u>Tank-mixes</u>						
<u>Acephate</u>						
+ fungicides						
+ insecticides	1,590	2,120	1.3	1.3	1.7	2,760
<u>Bacillus</u>						
<u>thuringiensis c/</u>						
+ fungicides						
+ insecticides	12,590	33,080	2.6	.5	1.3	16,910

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Table H5. Lettuce: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Annual : average :	: Total
<u>Tank-mixes (cont'd)</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>	230	2,100	9.1	-	-	-
+ carbaryl				.2	2.2	510
+ methomyl				.2	2.4	560
<u>Bacillus</u>						
<u>thuringiensis c/</u>	380	3,760	9.8	-	-	-
+ carbaryl				.1	.6	230
+ parathion				.5	5.2	1,990
<u>Bacillus</u>						
<u>thuringiensis c/</u>	5,400	9,950	1.8	-	-	-
+ methomyl				.6	1.2	6,220
<u>Bacillus</u>						
<u>thuringiensis c/</u>	1,750	1,910	1.0	-	-	-
+ mevinphos				.5	.6	1,080
Copper sulfate						
+ fungicides						
+ insecticides	660	660	1.0	2.4	2.4	1,630
Endosulfan	6,590	13,960	2.1	1.1	2.3	15,720
+ methomyl				.5	1.2	8,160
Endosulfan						
+ fungicides						
+ insecticides	3,230	3,230	1.0	3.7	3.7	12,070
Methomyl	1,130	2,270	2.0	.4	.9	1,020
+ methyl parathion				.6	1.3	1,410
Methomyl	1,420	3,120	2.1	.6	1.3	1,980
+ methyl parathion				.2	.6	810
+ parathion				.5	1.1	1,620
Methomyl						
+ fungicides						
+ insecticides	4,010	4,010	1.0	3.6	3.6	14,680

-- continued

Table H5. Lettuce: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ -- continued

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Annual :	: Total
				: Per time : applied :	: average :	
<u>Tank-mixes (cont'd)</u>						
Methyl parathion + parathion	2,450	3,470	1.4	.3 .7	.5 1.1	1,340 2,680
Parathion + toxaphene	1,220	1,350	1.1	.9 2.1	1.0 2.4	1,340 2,960
Other	-	4,780	-	5.3	-	25,760
Total	-	89,770	-	1.3	-	123,440
TOTAL PESTICIDES	-	252,710	-	1.0	-	268,070

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table II. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : applied :	: Annual : average : Total
Single applications						
<u>Herbicides</u>						
CDA	12,620	26,450	2.0	7.0	14.8	187,000
Chloroprotham	4,580	5,650	1.2	4.7	5.8	26,580
Chlorothalonil	70	260	3.7	.9	3.4	240
DCPA	860	870	1.0	5.7	5.8	5,010
Nitrofen	10,270	22,960	2.2	.9	2.0	21,350
Other	-	430	-	7.4	-	3,210
Total	-	56,620	-	4.2	-	243,390
<u>Insecticides</u>						
Azinphosmethyl	810	2,910	3.5	.4	1.7	1,420
Diazinon	4,170	12,560	3.0	.5	1.7	7,170
Ethion	340	340	1.0	.8	.8	300
Fonofos	3,660	3,660	1.0	1.6	1.6	5,990
Malathion	310	510	1.6	1.8	3.0	930
Methyl parathion	750	3,240	4.3	.5	2.1	1,620
Parathion	9,770	38,250	3.9	.5	1.9	19,280
Other	-	840	-	.7	-	670
Total	-	62,310	-	.5	-	37,380
<u>Fungicides</u>						
Anilazine	320	2,040	6.3	1.5	9.5	3,060
Chlorothalonil	5,020	22,930	4.5	1.8	8.4	42,440
Mancozeb	550	2,850	5.1	2.1	11.3	6,260
Maneb	5,040	11,010	2.1	2.2	4.8	24,430
Nabam	3,120	3,120	1.0	2.6	2.6	8,290
Zineb	270	540	2.0	1.5	3.0	820
Other	-	630	-	.2	-	160
Total	-	43,120	-	1.9	-	85,460
<u>Sprout Control</u>						
Maleic hydrazide	8,660	8,660	1.0	1.5	1.5	13,410
<u>Tank-mixes</u>						
CDA						
+ herbicides	7,600	9,980	1.3	11.5	15.1	114,820
Chlorothalonil	2,120	13,170	6.2	1.0	6.4	13,670
+ diazinon				.2	1.3	2,700

-- continued

Table 11. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
Tank-mixes (cont'd)						
Chlorothalonil	2,550	19,860	7.7	.7	5.9	15,290
+ methyl parathion				.3	2.0	4,970
Chlorothalonil	1,510	12,480	8.2	.9	7.7	11,750
+ parathion				.3	2.7	4,060
Chlorothalonil						
+ herbicides						
+ insecticides	2,650	3,820	1.4	2.9	4.3	11,430
Diazinon						
+ fungicides						
+ insecticides	1,730	13,760	7.9	.8	6.6	11,470
Maneb						
+ herbicides						
+ insecticides	1,560	4,670	2.9	2.8	8.3	13,080
Other	-	13,330	-	1.9	-	25,870
Total	-	91,070	-	2.5	-	229,110
TOTAL PESTICIDES	-	261,780	-	2.3	-	608,750

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table 12. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	:Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average : Total
<u>Single applications</u>						
<u>Herbicides</u>						
CDA	8,420	26,210	3.1	6.0	18.9	159,880
Chloroprotham	6,020	12,730	2.1	2.2	4.8	29,170
DEX	1,190	3,100	2.6	3.7	9.8	11,760
Nitrofen	11,140	44,440	3.9	1.5	6.1	69,010
Other	-	1,140	-	3.5	-	4,100
Total	-	87,620	-	3.1	-	273,920
<u>Insecticides</u>						
Azinphosmethyl	1,620	3,240	2.0	.7	1.4	2,390
Carbaryl	3,830	14,960	3.9	.8	3.3	12,790
Diazinon	3,740	18,080	4.8	.4	2.2	8,470
Fonofos	3,540	6,500	1.8	2.0	3.8	13,470
Malathion	300	720	2.4	1.1	2.7	830
Methyl parathion	3,240	21,920	6.7	.4	2.8	9,140
Parathion	5,920	33,130	5.5	.3	2.0	12,210
Other	-	1,810	-	1.0	-	1,960
Total	-	100,360	-	.6	-	61,260
<u>Fungicides</u>						
Chlorothalonil	9,410	48,390	5.1	1.6	8.7	82,160
Copper hydroxide	170	550	3.2	1.4	4.7	800
Mancozeb	2,570	9,780	3.8	1.3	5.2	13,420
Maneb	1,360	4,270	3.1	1.1	3.5	4,880
Thiram	410	1,630	3.9	38.0	151.2	62,020
Other	-	1,580	-	1.4	-	2,320
Total	-	66,740	-	2.4	-	165,600
<u>Sprout control</u>						
Maleic hydrazide	1,080	1,030	1.0	2.6	2.6	2,780
<u>Tank mixtures</u>						
Anilazine	1,490	4,470	3.0	1.4	4.4	6,700
+ parathion				1.0	3.0	4,470
+ nitrofen				1.5	4.5	6,700
Azinphosmethyl	1,490	2,980	2.0	.5	1.0	1,490
+ chlorothalonil				.5	.9	1,350
+ nitrofen				.5	1.0	1,490

-- continued

Table I2. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ _ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : applied :	: Annual : average : Total
<u>Tank mixtures (cont'd)</u>						
Carbaryl + maneb	230	1,640	7.1	.7 .7	5.6 5.6	1,310 1,310
CDA + chloroprotham	3,770	6,620	1.7	3.8 4.1	6.7 7.2	25,420 27,010
CDA + chloroprotham + nitrofen	3,770	16,330	4.3	2.3 1.1 1.1	9.9 4.7 4.9	37,600 17,780 18,360
CDA + herbicides	310	570	1.8	6.0	11.0	3,440
Chlorothalonil + malathion + nitrofen	1,490	2,980	2.0	.4 2.0 .5	.9 4.0 1.0	1,350 5,960 1,490
Chlorothalonil + malathion + nitrofen + zineb	1,490	2,980	2.0	.9 2.0 1.5 .2	1.8 4.0 3.0 .5	2,710 5,960 4,470 670
Chlorothalonil + parathion	2,880	10,430	3.6	1.5 .4	5.5 1.5	15,920 4,140
Chlorothalonil + parathion + nitrofen	1,490	2,980	2.0	.4 2.0 1.5	.9 4.0 3.0	1,350 5,960 4,470
Chlorothalonil + fungicides + insecticides	870	2,770	3.1	2.3	7.3	6,420
Copper hydroxide + maneb + nitrofen	1,490	2,380	1.5	1.0 .8 1.5	1.7 1.3 2.4	2,570 1,910 3,580
Diazinon + anilazine	20	20	1.0	- .5	- .5	- 1,600
Diazinon + maneb	1,600	3,190	1.9	.5 1.6	1.0 3.2	1,600 5,110

-- continued

Table 12. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : b/ : : treated :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
				: Per time	: average	
				: applied		
<u>Tank mixtures (cont'd)</u>						
Diazinon	730	2,190	3.0	.2	.7	550
+ parathion				.5	1.5	1,100
Ethide	120	120	1.0	.1	.1	10
+ thiram				.1	.1	10
Metallic copper	700	3,510	5.0	.3	1.8	1,260
+ sulfur				.3	1.8	1,260
Other	-	3,020	-	3.8	-	11,600
Total	-	69,180	-	3.5	-	246,140
TOTAL PESTICIDES	-	324,980	-	2.3	-	749,700

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table I3. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Chloroxuron	880	1,270	1.4	2.3	3.4	3,010
DCPA	11,330	13,440	1.1	6.7	8.0	91,340
Nitrofen	5,810	7,890	1.3	2.0	2.7	16,160
Other	-	2,510	-	2.0	-	5,110
Total	-	25,110	-	4.6	-	115,620
<u>Insecticides</u>						
Carbophenothion	2,960	2,960	1.0	3.4	3.4	10,330
Diazinon	480	1,140	2.3	.8	2.0	970
Ethion	2,120	2,180	1.0	.9	1.0	2,150
Fonofos	360	720	2.0	.1	.3	120
Malathion	870	940	1.0	.9	1.0	930
Methyl parathion	1,080	2,100	1.9	.3	.7	770
Parathion	5,200	9,920	1.9	.7	1.4	7,340
Toxaphene	1,760	3,840	2.1	3.2	7.1	12,620
Other	-	3,030	-	6.5	-	19,920
Total	-	26,830	-	2.0	-	55,150
<u>Fungicides</u>						
Anilazine	1,520	1,520	1.0	1.0	1.0	1,600
Mancozeb	3,170	10,980	2.9	2.4	7.2	27,030
Maneb	560	1,790	3.1	1.8	5.7	3,230
Zineb	380	960	2.5	1.4	3.7	1,410
Other	-	1,200	-	4.0	-	4,860
Total	-	16,450	-	2.3	-	38,130
<u>Nematicides</u>						
D-D	860	860	1.0	226.4	226.4	194,750
<u>Sprout Control</u>						
Maleic hydrazide	5,790	5,790	1.0	2.8	2.8	16,310
<u>Tank-mixes</u>						
Anilazine	410	410	1.0	1.0	1.0	410
+ maleic hydrazide				4.5	4.5	1,880
Anilazine	1,000	2,890	2.8	1.0	3.0	3,000
+ parathion				1.1	3.3	3,290
+ toxaphene				2.4	7.1	7,120

-- continued

Table I3. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
<u>Tank-mixes (cont'd)</u>						
Azinphosmethyl + parathion	960	960	1.0	.7 1.0	.7 1.0	710 960
Dyrene + insecticides + fungicides	220	330	1.5	1.9	2.9	650
Ethion + oils	960	960	1.0	.1 9.5	.1 9.5	160 9,210
Malathion + toxaphene	520	810	1.5	1.4 2.0	2.2 3.1	1,190 1,610
Maleic hydrazide + mancozeb	110	110	1.0	3.7 2.3	3.7 2.3	410 250
Methyl parathion + parathion	370	410	1.1	3.0 6.0	3.3 6.7	1,240 2,480
Parathion + mevinphos	960	1,920	2.0	1.0 .2	2.0 .5	1,920 430
Parathion + toxaphene	690	1,960	2.8	1.0 .9	2.8 2.8	1,960 1,960
Parathion + toxaphene + mancozeb	1,080	1,590	1.4	.7 2.4 2.0	1.1 3.5 3.1	1,210 3,820 3,290
Parathion + fungicides + insecticides	560	720	1.2	2.6	3.3	1,890
Other	-	3,260	-	17.5	-	57,050
Total	-	16,330	-	6.6	-	108,100
TOTAL PESTICIDES	-	91,370	-	5.7	-	528,060

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table I4. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres : : treated : : h/ :	: Acre- : : treatments : : :	: Times : : applied : : :	:Pounds of active ingredient		
				: Per acre : : Per time : : applied :	: Annual : : average : : :	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	14,700	16,300	1.1	3.6	3.9	58,770
DCPA	12,120	15,860	1.3	4.9	6.4	78,060
Isopropalin	2,720	3,020	1.1	4.8	5.3	14,640
Nitrofen	4,700	6,130	1.3	2.0	2.7	12,760
Trifluralin	3,340	5,370	1.6	.5	.9	3,130
Other	-	670	-	2.4	-	1,640
Total	-	47,350	-	3.5	-	169,000
<u>Insecticides</u>						
Diazinon	2,110	3,290	1.5	1.2	2.0	4,230
Ethion	580	580	1.0	.7	.7	430
Methomyl	3,470	5,730	1.6	.6	1.0	3,660
Mevinphos	270	540	2.0	.6	1.2	350
Parathion	6,980	21,870	3.1	.6	1.9	13,510
Toxaphene	6,830	16,840	2.4	1.2	3.0	20,960
Other	-	3,160	-	.7	-	2,460
Total	-	52,010	-	.8	-	45,600
<u>Fungicides</u>						
Captafol	720	3,590	4.9	.8	4.3	3,150
Chlorothalonil	2,050	5,070	2.4	.6	1.7	3,500
Mancozeb	860	1,690	1.9	1.4	2.8	2,420
Maneb	18,890	134,850	7.1	1.6	11.7	222,110
Other	-	1,070	-	.9	-	1,020
Total	-	146,270	-	1.5	-	232,200
<u>Sprout control</u>						
Maleic hydrazide	1,460	1,460	1.0	2.8	2.8	4,160
<u>Tank-mixes</u>						
Bensulide	840	840	1.0	3.9	3.9	3,340
+ DCPA				.2	.2	170
Copper compounds						
+ fungicides						
+ insecticides	570	670	1.1	3.1	3.7	2,120
DCPA	490	490	1.0	7.6	7.6	3,770
+ diazinon				1.4	1.4	690

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Table I4. Onions: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

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Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
<u>Tank-mixes (cont'd)</u>						
Diazinon	220	1,290	5.8	.1	.9	200
+ maneb				2.1	12.4	2,730
+ methazole				-	.1	20
+ parathion				.5	3.2	700
+ nitrofen				.1	.8	170
Diazinon	920	5,520	6.0	.1	.3	280
+ maneb				1.2	7.4	6,830
+ parathion				.3	1.9	1,760
Diazinon	820	2,140	2.6	.5	1.3	1,070
+ mevinphos				.5	1.3	1,070
Maneb	2,080	6,250	3.0	1.5	4.7	9,910
+ parathion				.5	1.7	3,550
Methyl parathion	760	1,900	2.5	2.7	6.8	5,230
+ toxaphene				2.7	6.8	5,230
Methyl parathion						
+ fungicides						
+ insecticides	1,470	3,170	2.1	2.3	5.0	7,410
Parathion	420	840	2.0	1.0	2.0	840
+ sulfur				4.2	8.4	3,550
+ toxaphene				1.0	2.0	850
Parathion	2,860	9,250	3.2	.5	1.7	4,920
+ toxaphene				.9	3.2	9,160
Other	-	4,280	-	2.8	-	12,220
Total	-	36,640	-	2.3	-	87,790
TOTAL PESTICIDES	-	283,730	-	1.8	-	538,750

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table J1. Snap beans: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 ^{a/}

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	:Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
Single applications						
<u>Herbicides</u>						
Dinoseb	17,900	17,900	1.0	2.6	2.6	47,320
EPTC	24,160	24,160	1.0	3.1	3.1	76,220
Glyphosate	250	250	1.0	1.8	1.8	470
Trifluralin	13,530	13,530	1.0	.3	.3	4,550
Total	-	55,840	-	2.3	-	128,560
<u>Insecticides</u>						
Carbaryl	410	410	1.0	.8	.8	350
Disulfoton	2,250	2,250	1.0	1.7	1.7	3,970
Parathion	1,070	1,070	1.0	.4	.4	540
Other	-	480	-	1.1	-	530
Total	-	4,210	-	1.2	-	5,390
<u>Fungicides</u>						
Benomyl	9,340	9,340	1.0	.5	.5	5,300
Other	-	380	-	.2	-	80
Total	-	9,720	-	.5	-	5,380
<u>Tank-mixes</u>						
EPTC	5,120	5,630	1.0	3.1	3.5	17,950
+ trifluralin				.4	.4	2,230
Other	-	130	-	2.9	-	380
Total	-	5,760	-	3.5	-	20,560
TOTAL PESTICIDES	-	75,530	-	2.1	-	159,890

^{a/} 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

^{b/} Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table J2. Snap beans: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		: Total
				: Per acre	: Annual	
				: Per time	: applied	
				: average		
<u>Single applications</u>						
<u>Herbicides</u>						
Trifluralin	3,280	3,280	1.0	0.5	0.5	1,640
Other	-	1,260	-	0.7	-	1,000
Total	-	4,540	-	0.5	-	2,640
<u>Insecticides</u>						
Carbaryl	1,210	5,110	4.2	0.9	3.8	4,600
Dimethoate	3,350	6,290	1.8	0.5	0.9	3,170
Phosdrin	1,840	2,430	1.3	0.5	0.7	1,320
Other	-	310	-	1.2	-	390
Total	-	14,140	-	0.6	-	9,480
TOTAL PESTICIDES	-	18,680	-	0.6	-	12,120

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

Table J3. Snap beans: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	:Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average : Total
Single applications						
Herbicides						
Bentazon	210	210	1.0	.3	.3	80
Dinoseb	40,190	42,790	1.0	1.7	1.8	75,500
EPTC	5,890	6,770	1.1	2.7	3.1	18,290
Profluralin	600	600	1.0	.8	.8	480
Trifluralin	12,730	12,770	1.0	.5	.5	6,670
Other	-	34,040	-	3.2	-	111,200
Total	-	97,180	-	2.1	-	212,220
Insecticides						
Acephate	15,680	16,630	1.0	.8	.8	13,480
Carbaryl	47,390	143,510	3.0	1.2	3.8	180,220
Dimethoate	3,000	3,000	1.0	.3	.3	1,000
Disulfoton	7,680	11,330	1.4	1.1	1.6	12,750
Methomyl	30,890	122,390	3.9	.5	2.2	67,960
Parathion	17,520	43,650	2.4	.3	.9	15,950
Phorate	160	160	1.0	1.1	1.1	180
Other	-	750	-	.8	-	640
Total	-	341,420	-	.8	-	292,180
Fungicides						
Benomyl	5,600	5,600	1.0	.6	.6	3,450
Copper hydroxide	29,420	54,550	1.8	1.8	3.4	101,030
Copper sulfate	33,480	111,430	3.3	.8	2.7	92,910
Sulfur	1,490	1,490	1.0	1.0	1.0	1,550
Other	-	530	-	4.5	-	2,400
Total	-	173,600	-	1.1	-	201,340
Tank mixtures						
Acephate	15,360	21,500	1.3	.7	1.0	16,450
+ copper sulfate				1.3	1.9	28,520
Acephate	21,300	21,300	1.0	.5	.5	11,180
+ parathion				.5	.5	10,060
Carbaryl	760	760	1.0	1.4	1.4	1,100
+ copper hydroxide				1.5	1.5	1,150
Carbaryl	4,000	8,000	2.0	1.7	3.4	13,600
+ copper hydroxide				1.0	2.0	8,000
+ sulfur				.6	1.1	4,560
Carbaryl	2,790	10,690	3.8	1.2	4.8	13,550
+ parathion				.5	1.9	5,310

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Table J3. Snap beans: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average : Total
<u>Tank mixtures (cont'd)</u>						
Carbaryl						
+ fungicides						
+ insecticides	65,900	84,940	1.2	2.1	2.8	186,700
EPTC	3,660	3,660	1.0	1.8	1.8	6,670
+ profluralin				.5	.5	1,810
EPTC	33,540	33,540	1.0	2.4	2.4	81,530
+ trifluralin				.1	.1	2,100
EPTC						
+ herbicides						
+ insecticides	1,300	1,300	1.0	3.0	3.0	3,990
Other	-	970	-	7.3	-	7,130
Total	-	186,660	-	2.1	-	403,410
TOTAL PESTICIDES	-	798,860	-	1.3	-	1,109,150

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table J4. Snap beans: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres treated:	: Acre-treatments:	: Times applied:	: Pounds of active ingredient		
				: Per acre	: Per time applied	: Annual average
	: b/	:	:	:	:	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Dinoseb	25,700	25,700	1.0	2.5	2.5	64,830
EPTC	26,770	27,090	1.0	3.1	3.2	85,860
Profluralin	4,410	4,410	1.0	.4	.4	2,010
Trifluralin	7,350	7,350	1.0	.4	.4	3,640
Other	-	50	-	2.8	-	140
Total	-	64,600	-	2.4	-	156,480
<u>Insecticides</u>						
Carbaryl	6,730	6,730	1.0	.7	.7	4,870
Diazinon	1,140	1,140	1.0	.3	.3	420
Disulfoton	1,170	1,170	1.0	.4	.4	570
Fonofos	15,780	15,780	1.0	1.0	1.0	17,350
Other	-	860	-	.2	-	220
Total	-	25,680	-	.9	-	23,430
<u>Fungicides</u>						
Benomyl	5,590	6,500	1.1	.5	.5	3,310
Captan	2,280	2,280	1.0	.8	.8	2,030
Ziram	730	730	1.0	1.2	1.2	880
Other	-	500	-	.8	-	400
Total	-	10,010	-	.6	-	6,620
<u>Tank-mixes</u>						
EPTC						
+ herbicides	990	990	1.0	3.6	3.6	3,640
Fonofos	380	380	1.0	.5	.5	190
+ EPTC				2.6	2.6	990
+ profluralin				.5	.5	190
Other	-	1,420	-	4.6	-	6,600
Total	-	2,790	-	4.1	-	11,610
TOTAL PESTICIDES	-	103,080	-	1.9	-	198,140

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table J5. Snap beans: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

	:	:	:	:Pounds of active ingredient					
				: Acres	: Acre-	: Times	: Per acre	:	
Pesticides	:	b/	:	: treated	: treatments	: applied	: Per time	: Annual	:
	:	:	:	: applied	: average	: Total			
<u>Single applications</u>									
<u>Herbicides</u>									
EPTC	690	690	1.0	2.2	2.2	1,540			
Trifluralin	570	570	1.0	.5	.5	310			
Other	-	10	-	2.0	-	20			
Total	-	1,270	-	1.4	-	1,870			
<u>Insecticides</u>									
Carbaryl	1,380	1,550	1.1	.7	.8	1,140			
Other	-	20	-	.5	-	10			
Total	-	1,570	-	.7	-	1,150			
<u>Fungicides</u>									
Copper sulfate	240	310	1.2	.8	1.0	250			
<u>Tank-mixes</u>									
EPTC	680	680	1.0	1.6	1.6	1,090			
+ trifluralin				.5	.5	350			
Other	-	50	-	6.0	-	300			
Total	-	730	-	2.3	-	1,740			
TOTAL PESTICIDES	-	3,880	-	1.2	-	5,010			

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table K1. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Alachlor	3,210	3,210	1.0	1.4	1.4	4,700
Atrazine	14,830	17,140	1.1	1.0	1.2	18,670
Butylate	980	980	1.0	4.7	4.7	4,680
Cyanazine	640	640	1.0	1.8	1.8	1,180
EPTC	250	250	1.0	2.1	2.1	530
Glyphosate	940	940	1.0	2.3	2.3	2,250
2,4-D	350	350	1.0	.4	.4	140
Other	-	370	-	.4	-	150
Total	-	23,830	-	1.3	-	32,300
<u>Insecticides</u>						
Carbaryl	3,280	9,290	2.8	1.3	3.8	12,520
EPN	12,430	17,590	1.4	.1	.1	1,940
Malathion	210	760	3.6	.3	1.3	290
Methomyl	16,880	46,270	2.7	.6	1.7	29,870
Methyl parathion	11,190	17,770	1.5	.6	.9	10,780
Parathion	4,980	13,480	2.7	.5	1.5	7,880
Other	-	1,490	-	.6	-	980
Total	-	106,650	-	.6	-	64,260
<u>Fungicides</u>						
Chlorothalonil	30	40	1.3	1.5	2.0	60
Maneb	-	20	-	1.5	-	30
Total	-	60	-	1.5	-	90
<u>Tank-mixes</u>						
Atrazine + alachlor	5,370	5,610	1.0	1.0 1.8	1.0 1.9	5,670 9,910
Atrazine + butylate	2,990	2,990	1.0	.8 3.3	.8 3.3	2,530 9,820
Atrazine + cyanazine	1,610	1,610	1.0	.9 1.1	.9 1.1	1,490 1,710
Atrazine + 2,4-D + 2,4,5-T	160	160	1.0	1.0 .1 .1	1.0 .1 .1	160 20 10

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Table K1. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : <u>b/</u> :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : average : : Total
<u>Tank-mixes (cont'd)</u>						
Atrazine + herbicides	360	360	1.0	9.5	9.5	3,440
Bladex + herbicides	390	390	1.0	5.6	5.6	2,190
Carbaryl + parathion	2,680	16,940	6.3	1.4 .3	9.2 1.8	24,780 4,880
Methomyl + parathion	430	1,300	3.0	.4 .1	1.3 .3	590 130
Other	-	6,680	-	1.7	-	11,820
Total	-	36,040	-	2.1	-	79,150
TOTAL PESTICIDES	-	166,630	-	1.0	-	175,800

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table K2. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per time : : applied :	: Annual : : average :	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Alachlor	4,630	4,630	1.0	1.3	1.3	6,330
Atrazine	24,990	25,920	1.0	1.5	1.6	41,170
Butylate	5,290	5,290	1.0	2.5	2.5	13,620
2,4-D	3,710	3,710	1.0	0.3	0.3	1,380
Other	-	3,510	-	2.9	-	10,220
Total	-	43,060	-	1.6	-	72,720
<u>Insecticides</u>						
Carbaryl	740	2,610	3.5	1.6	5.9	4,380
Disulfoton	240	240	1.0	2.2	2.2	540
Fonofos	12,840	12,840	1.0	1.5	1.5	19,260
Methomyl	47,780	668,930	14.0	0.2	4.1	197,150
Parathion	8,150	41,770	5.1	0.5	2.6	21,620
Toxaphene	19,780	152,950	7.7	1.2	9.2	183,890
Other	-	2,470	-	0.5	-	1,360
Total	-	881,810	-	0.4	-	428,200
<u>Fungicides</u>						
Mancozeb	18,520	227,990	12.3	1.1	13.7	253,970
Maneb	24,230	172,450	7.1	1.0	7.1	173,110
Other	-	1,460	-	0.8	-	1,280
Total	-	401,900	-	1.0	-	428,360
<u>Tank mixtures</u>						
Atrazine	14,000	14,000	1.0	1.8	1.8	25,910
+ butylate				4.3	4.3	60,910
Atrazine						
+ herbicides	80	110	1.3	2.0	2.8	230
Methomyl	320	4,790	14.9	0.1	2.3	750
+ methyl parathion				0.2	3.7	1,200
Methomyl						
+ fungicides	1,020	8,180	8.0	1.3	11.0	11,310
Methyl parathion	22,710	203,890	8.9	0.4	3.6	81,840
+ parathion				0.8	7.2	163,680
Total	-	230,970	-	1.4	-	345,830
TOTAL PESTICIDES	-	1,557,740	-	0.8	-	1,275,110

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

Table K3. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Alachlor	85,520	85,520	1.0	1.8	1.8	161,450
Atrazine	65,760	66,100	1.0	1.4	1.4	95,450
Bentazon	3,280	3,780	1.1	.9	1.0	3,530
Butylate	15,740	15,890	1.0	3.7	3.7	59,440
Cyanazine	40,480	40,480	1.0	2.7	2.7	109,810
EPTC	9,680	9,680	1.0	4.7	4.7	46,450
Propachlor	7,910	7,910	1.0	3.6	3.6	29,180
2,4-D	6,250	6,250	1.0	.4	.4	2,530
Other	-	6,180	-	.9	-	6,150
Total	-	241,790	-	2.1	-	513,990
<u>Insecticides</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>	150	600	4.0	-	-	-
Carbaryl	134,260	346,380	2.5	1.4	3.6	488,130
EPN	3,560	3,560	1.0	.3	.3	1,290
Fonofos	28,520	35,660	1.2	1.0	1.3	38,290
Lindane	2,090	6,270	3.0	.5	1.6	3,530
Malathion	1,010	1,310	1.2	.8	1.0	1,110
Meta-systox	910	1,090	1.1	.5	.6	550
Methomyl	86,450	203,240	2.3	.6	1.4	126,010
Methyl parathion	13,670	33,670	2.4	.6	.5	21,680
Mevinphos	1,830	1,830	1.0	.2	.2	460
Parathion	26,520	53,810	2.0	.4	.9	25,770
Phorate	30,260	30,260	1.0	1.1	1.1	35,380
Terbufos	13,670	13,670	1.0	1.3	1.3	18,890
Other	-	10,880	-	1.5	-	16,360
Total	-	742,250	-	1.0	-	777,450
<u>Fungicides</u>						
Captan	10	10	1.0	1.0	1.0	10
Chlorothalonil	10	70	7.0	.4	3.0	30
Metiram	-	10	-	1.0	-	10
Total	-	90	-	.5	-	50
<u>Bird repellent</u>						
Avitrol	16,720	16,720	1.0	.1	.1	3,240
<u>Tank mixtures</u>						
Atrazine	16,390	16,390	1.0	1.0	1.0	17,290
+ alachlor				1.5	1.5	24,400

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Table K3. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	:Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total :
<u>Tank mixtures (cont'd)</u>						
Atrazine	11,790	11,790	1.0	.7	.7	9,060
+ butylate				2.3	2.3	26,740
Atrazine	210	210	1.0	2.0	2.0	420
+ cyanazine				.1	.1	30
+ alachlor				.2	.2	40
+ butylate				4.2	4.2	880
Atrazine	480	480	1.0	.8	.8	410
+ metolachlor				.7	.7	350
Atrazine						
+ herbicides	2,640	2,640	1.0	2.4	2.4	6,390
Bladex						
+ herbicides	1,510	1,510	1.0	4.0	4.0	6,150
Carbaryl	800	2,460	3.0	1.1	3.6	2,890
+ malathion				1.0	3.0	2,370
Carbaryl	11,090	23,080	2.0	1.3	2.7	30,280
+ methomyl				.5	1.0	11,040
Carbaryl	4,430	5,420	1.2	1.3	1.6	7,220
+ mevinphos				.2	.3	1,170
Carbaryl	25,470	57,720	2.2	1.3	3.0	78,160
+ parathion				.5	1.1	27,570
Carbaryl						
+ insecticides	2,490	6,660	2.6	1.7	4.5	11,450
Cyanazine	14,870	14,870	1.0	1.6	1.6	24,920
+ alachlor				2.2	2.2	33,140
Cyanazine	2,850	2,850	1.0	3.1	3.1	8,990
+ butylate				2.8	2.8	8,070
EPN	4,090	4,090	1.0	2.2	2.2	9,260
+ methyl parathion				4.5	4.5	18,520
Methomyl	520	2,580	4.9	.4	2.2	1,160
+ mancozeb				.5	2.3	1,200

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Table K3. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	:Pounds of active ingredient		
				: Per acre :	: Annual :	: Total :
	: b/ :			: Per time applied :	: average :	
<u>Tank mixtures (cont'd)</u>						
Parathion	12,720	12,720	1.0	.1	.1	2,450
+ TDE				.8	.8	9,960
Other	-	16,110	-	1.6	-	25,990
Total	-	181,580	-	2.2	-	407,970
TOTAL PESTICIDES	-	1,182,430	-	1.4	-	1,702,700

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table K4. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northwest region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
				: Per time	: average	
<u>Single applications</u>						
<u>Herbicides</u>						
Alachlor	36,730	39,850	1.0	2.1	2.2	83,720
Atrazine	28,800	29,120	1.0	1.5	1.5	45,100
Butylate	1,040	1,040	1.0	3.1	3.1	3,300
Dinoseb	2,060	2,060	1.0	3.4	3.4	7,020
EPTC	12,170	12,170	1.0	3.5	3.5	42,620
Glyphosate	1,850	1,850	1.0	1.3	1.3	2,570
Vernam	15,210	15,210	1.0	3.6	3.6	55,820
2,4-D	14,040	14,040	1.0	1.3	1.3	18,300
Other	-	650	-	1.8	-	1,190
Total	-	115,990	-	2.2	-	259,640
<u>Insecticides</u>						
Carbaryl	1,170	1,170	1.0	1.8	1.8	2,130
Fonofos	13,310	13,310	1.0	1.0	1.0	13,600
Meta-systox	3,140	3,140	1.0	.6	.6	1,930
Methomyl	32,200	114,990	3.5	.4	1.5	48,970
Other	-	740	-	1.6	-	1,190
Total	-	133,350	-	.5	-	67,820
<u>Tank-mixes</u>						
Atrazine + vernam	3,860	3,860	1.0	1.4	1.4	5,530
				4.1	4.1	16,140
Atrazine + herbicides	200	200	1.0	5.2	5.2	1,050
Carbaryl + methomyl	1,310	1,310	1.0	1.8	1.8	2,380
				.4	.4	590
Total	-	5,370	-	4.7	-	25,690
TOTAL PESTICIDES	-	254,710	-	1.3	-	353,150

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table K5. Sweet corn: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
<u>Single applications</u>						
<u>Herbicides</u>						
Trifluralin	350	350	1.0	.5	.5	180
<u>Insecticides</u>						
Methomyl	2,670	24,130	9.0	.8	8.0	21,380
Other	-	40	-	1.5	-	60
Total	-	24,170	-	.8	-	21,440
<u>Fungicides</u>						
Maneb	2,630	2,630	1.0	1.5	1.5	4,200
<u>Tank-mixes</u>						
Carbaryl + methomyl	2,630	21,000	7.9	.6 .3	4.8 2.7	12,720 7,090
Total	-	21,000	-	.9	-	19,810
TOTAL PESTICIDES	-	48,150	-	.9	-	45,630

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table L1. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average :
	: b/ :					: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Diphenamid	500	500	1.0	2.8	2.8	1,410
Metribuzin	460	460	1.0	.3	.3	140
Pebulate	380	380	1.0	.1	.1	50
Trifluralin	8,650	8,650	1.0	.7	.7	6,520
Other	-	650	-	1.6	-	1,050
Total	-	10,640	-	.8	-	9,170
<u>Insecticides</u>						
Azinphosmethyl	4,750	15,860	3.3	.5	1.7	8,200
<u>Bacillus</u>						
<u>thuringiensis c/</u>	540	540	1.0	-	-	-
Carbaryl	860	2,350	2.7	1.0	2.8	2,420
Diazinon	570	1,100	1.9	.5	.9	560
Endosulfan	960	4,020	4.1	.7	3.3	3,170
Oxamyl	2,010	6,140	3.0	.4	1.3	2,710
Parathion	2,230	4,000	1.7	.4	.8	1,880
Phosphamidon	820	1,240	1.5	.5	.8	720
Other	-	1,540	-	.6	-	960
Total	-	36,790	-	.5	-	20,620
<u>Fungicides</u>						
Captafol	3,290	12,110	3.6	1.7	6.4	21,360
Chlorothalonil	4,450	19,730	4.4	1.2	5.5	24,580
Mancozeb	760	2,670	3.5	1.9	6.8	5,190
Maneb	1,160	3,310	2.8	2.3	6.6	7,710
Other	-	1,190	-	1.2	-	1,430
Total	-	39,010	-	1.5	-	60,270
<u>Other</u>						
Ethepon	880	880	1.0	1.2	1.2	1,090
<u>Tank-mixes</u>						
Azinphosmethyl	430	1,280	2.9	.4	1.4	630
+ captafol				1.8	5.2	2,240
+ oxamyl				.5	1.5	640
Azinphosmethyl	1,350	2,740	2.0	.4	.9	1,310
+ chlorothalonil				.9	1.8	2,490

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Table L1. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : : average : : Total
Tank-mixes (cont'd)						
Azinphosmethyl	920	3,300	3.5	.2	.8	820
+ chlorothalonil				1.0	3.4	3,140
+ oxamyl				.3	.9	820
Azinphosmethyl	1,810	11,800	6.5	.4	3.2	5,860
+ endosulfan				.8	4.9	450
Azinphosmethyl	590	1,190	2.0	.3	.7	450
+ endosulfan				.8	1.6	950
+ maneb				2.4	4.8	2,850
Azinphosmethyl	480	1,140	2.3	.5	1.3	640
+ oxamyl				.5	1.2	570
Azinphosmethyl						
+ fungicides						
+ insecticides	2,920	4,710	1.6	2.1	3.5	10,330
Captafol						
+ insecticides	470	470	1.0	2.6	2.6	1,230
Chlorothalonil	330	330	1.0	.9	.9	300
+ diazinon				.5	.5	160
Chlorothalonil	330	1,960	5.9	.9	5.3	1,780
+ endosulfan				.5	3.0	980
Chlorothalonil						
+ fungicides						
+ insecticides	1,520	5,400	3.5	1.8	6.5	9,880
Copper hydroxide						
+ other	480	670	1.3	2.5	3.5	1,680
Dicofol						
+ other	50	60	1.2	.6	.8	40
Maneb	80	470	5.8	1.7	10.1	810
+ oxamyl				.5	3.0	240

-- continued

Table L1. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Northeast region, 1979 a/ -- continued

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
				: Per time	: applied	: average

Tank-mixes (cont'd)

Oxamyl + fungicides	170	590	3.4	1.7	6.0	1,020
Other	-	900	-	1.9	-	1,720
Total	-	37,010	-	1.6	-	62,430
TOTAL PESTICIDES	-	124,330	-	1.2	-	153,580

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table L2. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per time : : applied :	: Per acre : : average :	: Annual : : Total :
<u>Single applications</u>						
<u>Herbicides</u>						
Diphenamid	2,960	2,960	1.0	2.9	2.9	8,630
Metribuzin	8,150	9,820	1.2	0.4	0.5	4,540
Napropamide	890	890	1.0	0.6	0.6	540
Paraquat	19,000	28,590	1.5	0.6	0.9	17,830
Pebulate	200	200	1.0	0.2	0.2	40
Trifluralin	800	2,130	2.6	1.1	3.1	2,480
Other	-	1,270	-	1.6	-	2,100
Total	-	45,860	-	0.7	-	36,170
<u>Insecticides</u>						
<u>Bacillus</u>						
thuringiensis c/	20,380	178,020	8.7	-	-	-
Carbaryl	3,550	17,770	5.0	1.3	6.6	23,620
Diazinon	2,550	12,550	4.9	0.7	3.6	9,420
Dimethoate	4,350	80,420	18.4	0.2	5.1	22,370
Endosulfan	5,280	39,300	7.4	0.5	4.3	22,810
Fonofos	1,360	1,360	1.0	1.1	1.1	1,630
Malathion	280	1,250	4.4	1.1	5.3	1,490
Methamidophos	27,300	121,860	4.4	0.9	4.0	111,750
Methomyl	32,550	321,530	9.8	0.4	4.8	157,680
Monocrotophos	2,450	15,410	6.2	0.8	5.6	13,770
Oxamyl	5,210	39,140	7.5	0.3	2.8	14,870
Permethrin	16,050	90,360	5.6	-	0.3	5,390
Toxaphene	1,460	4,320	2.9	1.2	3.8	5,570
Other	-	11,260	-	0.3	-	4,450
Total	-	934,550	-	0.4	-	394,820
<u>Fungicides</u>						
Benomyl	8,770	25,920	2.9	0.3	1.0	9,070
Captafol	1,020	1,760	1.7	1.4	2.5	2,600
Captan	4,100	10,970	2.6	0.7	1.9	7,790
Chlorothalonil	16,020	179,870	11.2	0.8	9.6	154,500
Copper compounds	30,730	376,100	12.2	0.8	10.2	315,540
Copper hydroxide	2,940	7,990	2.7	1.1	3.1	9,130
Mancozeb	16,590	303,290	18.2	1.0	19.5	324,050
Maneb	17,350	205,940	11.8	0.8	10.4	180,540
Metiram	3,020	27,570	9.1	1.1	10.7	32,580
Streptomycin	2,520	13,580	5.3	-	0.4	1,020
Zineb	1,690	33,750	19.9	1.5	29.9	50,630
Other	-	16,590	-	2.1	-	36,160
Total	-	1,203,330	-	0.9	-	1,123,610

- continued

Table L2. Tomatoes: Acres treated, acre-treatments, times applied; rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/ - continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied : : :	: Pounds of active ingredient		
				: Per acre : : Per time : : applied :	: Annual : : average : : :	: Total
<u>Nematicides</u>						
Chloropicrin-methyl bromide	7,110	7,370	1.0	120.2	124.6	886,130
D-D	3,980	3,980	1.0	45.9	5.9	182,930
Ethylene dibromide	1,670	1,670	1.0	6.4	6.4	10,690
Other	-	680	-	176.9	-	120,340
Total	-	13,700	-	87.5	-	1,200,090
<u>Tank mixtures</u>						
<u>Bacillus</u>						
<u>thuringiensis</u>						
+ fungicides						
+ insecticides	1,910	11,510	6.0	1.7	10.6	20,390
<u>Bacillus</u>						
<u>thuringiensis c/</u>						
+ methomyl	340	2,020	5.9	-	-	-
				0.3	2.0	690
<u>Carbaryl</u>						
+ fungicides						
+ insecticides	420	4,750	11.3	4.3	48.9	20,570
<u>Carbaryl</u>						
+ fungicides	550	550	1.0	3.9	3.4	2,190
<u>Copper compounds</u>						
+ fungicides	2,790	20,480	7.3	5.0	37.1	103,760
<u>Di-syston</u>						
+ ethoprop	20	20	1.0	1.0	1.0	20
				1.5	1.5	30
<u>Maneb</u>						
+ fungicides						
+ insecticides	460	460	1.0	5.6	5.6	2,590
<u>Parathion</u>						
+ toxaphene	1,540	12,340	8.0	-	0.5	860
				2.8	23.2	35,770
Other	-	61,370	-	5.7	-	353,420
Total	-	113,500	-	4.8	-	540,290
TOTAL PESTICIDES	-	2,310,940	-	1.4	-	3,294,980

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table L3. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	: Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average : Total
<u>Single applications</u>						
<u>Herbicides</u>						
Chloramben	590	850	1.4	2.0	2.8	1,700
Diphenamid	2,550	2,550	1.0	2.7	2.7	6,970
Metribuzin	14,170	18,060	1.2	.4	.5	8,130
Napropamide	620	620	1.0	1.0	1.0	620
Pebulate	2,700	2,700	1.0	.9	.9	2,450
Trifluralin	19,820	20,130	1.0	.7	.7	15,210
Other	-	880	-	1.8	-	1,670
Total	-	45,790	-	.8	-	36,750
<u>Insecticides</u>						
Azinphosmethyl	4,340	10,130	2.3	.4	1.1	5,010
<u>Bacillus</u>						
thuringiensis c/	280	410	1.4	-	-	-
Carbaryl	17,890	63,960	3.5	1.0	3.6	64,700
Diazinon	2,890	4,130	1.4	.6	.9	2,650
Endosulfan	7,690	16,720	2.1	.6	1.4	11,140
Methamidophos	800	2,400	3.0	.4	1.2	960
Methomyl	4,070	17,390	4.2	.4	2.1	8,560
Parathion	840	1,890	2.2	.4	1.1	940
Other	-	4,850	-	.5	-	2,580
Total	-	121,880	-	.7	-	96,540
<u>Fungicides</u>						
Captafol	10,360	36,820	3.5	1.6	5.8	61,000
Chlorothalonil	15,600	57,070	3.6	1.3	5.0	79,450
Copper complexes	1,430	9,310	6.5	1.6	10.9	15,650
Copper hydroxide	8,180	31,940	3.9	1.8	7.0	57,590
Copper sulfate	8,190	20,610	2.5	1.1	2.8	23,500
Mancozeb	6,410	24,180	3.7	2.1	8.1	52,190
Maneb	10,440	46,880	4.4	1.9	8.6	90,690
Naram	730	3,100	4.2	.4	2.0	1,460
Zineb	720	5,380	7.4	1.2	9.1	6,560
Other	-	2,060	-	.8	-	1,710
Total	-	237,350	-	1.6	-	389,800
<u>Growth regulator</u>						
Ethepon	13,180	14,400	1.0	1.3	1.4	19,040
<u>Tank mixtures</u>						
Azinphosmethyl	800	2,840	3.5	.4	1.4	1,190
+ chlorothalonil				1.4	5.0	4,010

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Table L3. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : : treatments : : :	: Times : : applied :	: Pounds of active ingredient		
				: Per acre : : Per time : : applied :	: Annual : : average :	: Total
<u>Tank mixtures (cont'd)</u>						
Azinphosmethyl	1,520	4,560	3.0	.4	1.2	1,850
+ chlorothalonil				2.3	6.9	10,530
+ copper hydroxide				2.3	6.8	10,370
Azinphosmethyl	1,120	3,370	3.0	.4	1.3	1,480
+ copper hydroxide				2.5	7.5	8,400
Azinphosmethyl	560	1,690	3.0	.2	.7	420
+ copper hydroxide				3.3	10.0	5,600
+ parathion				1.0	3.0	1,690
Azinphosmethyl	1,060	1,060	1.0	.7	.7	800
+ methamidophos				.5	.5	530
Azinphosmethyl						
+ fungicides						
+ insecticides	570	1,470	2.5	3.3	8.7	4,970
<u>Bacillus</u>						
<u>thuringiensis c/</u>						
+ fungicides	720	920	1.2	1.5	1.9	1,380
Captafol	960	2,870	2.9	1.3	3.9	3,780
+ endosulfan				.5	1.5	1,440
Captafol	1,060	2,130	2.0	1.3	2.6	2,800
+ mancozeb				2.4	4.8	5,110
Captafol						
+ fungicides						
+ insecticides	1,610	1,640	1.0	3.1	3.2	5,240
Carbaryl	1,420	3,350	2.3	1.0	2.4	3,480
+ captafol				1.3	1.3	4,320
Carbaryl	1,810	5,890	3.2	1.4	4.6	8,340
+ chlorothalonil				1.4	4.7	8,510
Carbaryl	1,900	5,120	2.6	1.3	3.6	6,910
+ chlorothalonil				1.6	4.3	8,180
+ copper hydroxide				1.3	3.4	6,380

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Table L3. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Annual	: Total
				: Per time	: applied	: average
<u>Tank mixtures (cont'd)</u>						
Carbaryl	2,040	5,140	2.5	1.0	2.6	5,350
+ copper sulfate				.6	1.5	3,010
+ maneb				2.2	5.4	11,070
Carbaryl	610	2,610	4.2	1.0	4.3	2,670
+ mancozeb				2.1	9.0	5,510
Carbaryl	1,310	3,260	2.4	1.0	2.6	3,500
+ maneb				2.3	5.8	7,590
Carbaryl						
+ fungicides						
+ insecticides	7,850	13,180	1.6	3.4	5.8	45,870
Chlorothalonil	220	2,200	10.0	.6	6.8	1,500
+ captafol				1.8	17.6	3,860
+ endosulfan				.8	7.5	1,650
+ mancozeb				2.4	24.0	5,260
Chlorothalonil	770	1,150	1.4	.7	1.0	820
+ copper complexes				1.4	2.0	1,550
+ endosulfan				.8	1.1	860
Chlorothalonil	640	3,070	4.7	1.7	8.4	5,390
+ copper hydroxide				.6	3.1	1,960
Chlorothalonil	450	1,350	3.0	1.4	4.2	1,900
+ copper hydroxide				1.1	3.3	1,500
+ endosulfan				.6	1.9	860
Chlorothalonil	1,770	1,780	1.0	1.8	1.8	3,300
+ diazinon				.3	.3	560
Chlorothalonil	450	1,510	3.3	1.6	5.4	2,470
+ endosulfan				.6	2.0	920
Chlorothalonil	2,610	6,480	2.4	1.5	3.9	10,350
+ methomyl				.7	1.6	4,210
Chlorothalonil						
+ fungicides						
+ insecticides	1,860	2,510	1.3	2.5	3.4	6,500

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Table L3. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	: Pounds of active ingredient :		
				: Per acre :	: Per time applied :	: Annual average : Total :
<u>Tank mixtures (cont'd)</u>						
Copper complexes	1,760	3,160	1.7	1.8	3.3	5,840
+ captafol				1.6	2.9	5,140
+ endosulfan				.7	1.3	2,320
Copper compounds	840	870	1.0	3.0	3.1	2,610
Copper compounds						
+ fungicides						
+ insecticides	5,290	15,600	2.9	2.7	8.0	42,340
Copper hydroxide	2,030	11,500	5.6	1.8	10.2	20,790
+ captafol				1.0	5.4	10,990
+ endosulfan				.5	2.8	5,650
Copper hydroxide	1,310	3,320	2.5	1.0	2.7	3,570
+ sulfur				.6	1.6	2,040
Copper sulfate	1,130	2,130	1.8	1.4	2.6	3,010
+ mancozeb				1.6	3.0	3,420
Endosulfan	1,180	5,770	4.8	.4	2.4	2,850
+ maneb				1.2	6.1	7,160
Endosulfan	1,060	1,060	1.0	.5	.5	530
+ phosphamidon				1.0	1.0	1,060
Maneb	620	1,860	3.0	1.7	5.1	3,220
+ metallic copper				.1	.4	250
+ sulfur				.1	.4	250
Maneb	1,120	1,120	1.0	1.2	1.2	1,350
+ methamidophos				.	.9	950
Maneb	320	1,270	3.9	1.2	4.7	1,530
+ sulfur				.8	3.1	990
Metallic copper	1,020	1,900	1.8	.2	.5	560
+ sulfur				.2	.5	560
Metribuzin	4,060	4,060	1.0	.3	.3	1,470
+ trifluralin				.8	.8	3,050

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Table L3. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :	: Per time : : applied :	: Annual : average : : Total :
<u>Tank mixtures (cont'd)</u>						
Metribuzin + herbicides	1,770	1,860	1.0	.9	1.0	1,780
Other	-	4,230	-	2.0	-	8,640
Total	-	140,860	-	2.8	-	401,640
TOTAL PESTICIDES	-	560,280	-	1.6	-	943,770

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table L4. Tomatoes: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres treated :	: Acre-treatments :	: Times applied :	:Pounds of active ingredient		
				: Per acre :	: Per time applied :	: Annual average : Total
Single applications						
<u>Herbicides</u>						
Bensulide	440	460	1.0	3.0	3.1	1,390
Napropamide	240	300	1.2	.5	.6	150
Trifluralin	220	220	1.0	1.0	1.0	240
Other	-	480	-	2.9	-	1,400
Total	-	1,460	-	2.1	-	3,180
<u>Insecticides</u>						
Carbaryl	400	930	2.3	1.1	2.5	1,030
Diazinon	440	3,060	6.9	.4	2.9	1,290
Methomyl	590	2,370	4.0	.9	3.8	2,250
Mevinphos	420	1,250	2.9	.2	.7	310
Parathion	590	1,310	2.2	.4	1.1	650
Toxaphene	130	480	3.6	1.1	4.3	560
Other	-	750	-	.7	-	560
Total	-	10,150	-	.6	-	6,650
<u>Fungicides</u>						
Captafol	260	1,050	4.0	1.7	7.0	1,830
Maneb	860	4,690	5.4	1.5	8.5	7,380
Other	-	600	-	.7	-	450
Total	-	6,340	-	1.5	-	9,660
<u>Tank-mixes</u>						
Methomyl + maneb	420	1,670	3.9	.9	3.5	1,510
				1.2	4.8	2,010
Other	-	490	-	2.2	-	1,080
Total	-	2,160	-	2.1	-	4,600
TOTAL PESTICIDES	-	20,110	-	1.1	-	24,090

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table M1. Watermelons: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	:Pounds of active ingredient		
				Per acre	Per time	Annual
				applied	average	Total
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	600	600	1.0	0.9	0.9	580
Butralin	770	770	1.0	1.9	1.9	1,530
Naptalam	200	200	1.0	1.8	1.8	370
Paraquat	720	720	1.0	0.6	.6	470
Other	-	5,440	-	0.6	-	3,630
Total	-	7,730	-	0.8	-	6,580
<u>Insecticides</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>	1,110	6,430	5.7	-	-	-
Carbaryl	620	820	1.3	1.0	1.3	850
Dimethoate	2,440	10,990	4.5	0.3	1.6	4,060
Endosulfan	950	2,960	3.1	0.8	2.5	2,450
Methomyl	4,600	20,430	4.4	0.7	3.5	16,220
Parathion	850	3,350	3.9	0.3	1.3	1,120
Other	-	3,780	-	1.0	-	4,090
Total	-	48,760	-	0.5	-	28,790
<u>Fungicides</u>						
Benomyl	5,330	13,060	2.4	0.8	2.1	11,720
Captafol	1,150	2,870	2.4	1.2	3.2	3,720
Chlorothalonil	13,160	35,700	2.7	1.0	2.9	39,240
Difolatan	3,820	8,770	2.2	1.1	2.6	10,070
Mancozeb	2,570	10,070	3.9	1.6	6.5	16,810
Maneb	11,900	52,870	4.4	1.3	6.0	72,570
Other	-	6,730	-	1.5	-	10,170
Total	-	130,070	-	1.2	-	164,300
<u>Tank mixtures</u>						
Alanap	60	60	1.0	1.6	1.6	100
+ bensulide				1.1	1.1	70
Benomyl	410	1,140	2.7	0.3	1.0	420
+ maneb				0.6	1.7	700
Carbaryl	120	250	2.0	1.0	2.0	250
+ chlorothalonil				0.8	1.8	220

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Table M1. Watermelons: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank mix applications, Southeast region, 1979 a/ - continued

Pesticides	: Acres : : b/ :	: Acre- : treatments :	: Times : : applied :	: Pounds of active ingredient		
				: Per time : : applied :	: Annual : : average :	: Total
Copper sulfate	130	1,200	9.2	0.1	1.4	190
+ dimethoate				0.2	2.3	300
+ maneb				0.3	2.9	380
Disulfoton	770	770	1.0	0.4	0.4	340
+ ethoprop				0.8	0.8	690
Other	-	160	-	2.6	-	420
Total	-	3,580	-	1.1	-	4,080
TOTAL PESTICIDES	-	190,140	-	1.0	-	203,750

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated sums in this column not derived for "other" and "totals" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

Table M2. Watermelons: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre :		: Total
				: Per time : applied :	: Annual : average :	
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	1,240	2,380	1.9	1.9	3.7	4,660
Naptalam	600	600	1.0	1.5	1.5	910
Other	-	800	-	1.1	-	890
<u>Insecticides</u>						
Carbaryl	1,530	6,170	4.0	.6	2.6	4,100
Dicofol	150	350	2.3	.3	.8	130
Endosulfan	130	560	4.3	.8	3.8	500
Malathion	300	420	1.4	2.0	2.8	850
Methoxychlor	190	690	3.6	1.3	5.0	950
Other	-	270	-	5.3	-	1,450
Total	-	8,460	-	.9	-	7,980
<u>Fungicides</u>						
Benomyl	670	1,290	1.9	.3	.5	400
Captafol	670	2,030	3.0	1.3	4.1	2,760
Chlorothalonil	1,250	3,350	2.6	.7	1.9	2,450
Other	-	2,430	-	1.0	-	2,500
Total	-	9,100	-	.8	-	8,110
<u>Nematicides</u>						
Ethylene dibromide	480	480	1.0	14.1	14.1	6,780
<u>Tank mixtures</u>						
Benomyl + captafol	60	180	3.0	.2 1.7	.6 5.2	40 310
Bensulide	60	170	2.8	.1	.3	20
Biphenyl + carbaryl + captafol + sulfur	20	170	8.5	- .5 .4 .1	- 4.0 3.0 .5	- 80 60 10
Metallic copper + sulfur	120	230	1.9	.1 1.3	.1 2.4	20 290
Naptalam + bensulide	360	360	1.0	2.6 1.4	2.6 1.4	970 490

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Table M2. Watermelons: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Midwest region, 1979 a/ -- continued

	:	:	:	:Pounds of active ingredient					
				: Acres	: Acre-	: Times	: Per acre	:	
Pesticides	:	b/	:	: treated:	: treatments:	: applied	: Per time	: Annual	:
	:	:	:	:	:	:	: applied	: average	: Total
<u>Tank mixtures (cont'd)</u>									
Other	-		650	-		2.1	-		1,420
Total	-		1,760	-		2.1	-		3,710
TOTAL PESTICIDES	-		23,580	-		1.4	-		33,040

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

Table M3. Watermelons: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/

Pesticides	: Acres : : treated : : b/ :	: Acre- : treatments : : :	: Times : applied :	: Pounds of active ingredient		
				: Per acre	: Per time	: Annual
				: applied	: average	: Total
<u>Single applications</u>						
<u>Herbicides</u>						
Bensulide	1,760	2,040	1.1	3.4	3.9	7,030
DCPA	790	4,750	6.0	.5	3.0	2,380
Trifluralin	9,310	10,990	1.1	.5	.6	5,870
Other	-	480	-	.7	-	340
Total	-	18,260	-	.8	-	15,620
<u>Insecticides</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>	1,200	2,400	2.0	-	-	-
Carbaryl	3,950	5,760	1.4	1.1	1.7	6,820
Diazinon	790	1,580	2.0	.3	.7	590
Dimethoate	620	890	1.4	.5	.7	460
Endosulfan	440	440	1.0	.4	.4	210
Meta-systox	440	440	1.0	.5	.5	250
Methomyl	770	3,030	3.9	.9	3.8	2,990
Parathion	6,100	16,430	2.6	.5	1.4	8,790
Other	-	2,670	-	1.7	-	4,620
Total	-	33,640	-	.7	-	24,730
<u>Fungicides</u>						
Benomyl	1,220	1,560	1.2	.3	.4	540
Captafol	3,290	6,660	2.0	1.4	2.9	9,600
Chlorothalonil	8,280	22,860	2.7	.9	2.6	21,890
Maneb	5,310	26,630	5.0	1.2	6.4	34,050
Total	-	57,710	-	1.1	-	66,080
<u>Tank-mixes</u>						
<u>Bacillus</u>						
<u>thuringiensis c/</u>						
+ insecticides	700	970	1.3	.4	.5	410
Captafol	2,260	4,530	2.0	1.3	2.6	5,960
+ naled				.9	2.0	4,440
Chlorothalonil	410	1,630	3.9	2.3	9.2	3,780
+ dimethoate				.3	1.5	600

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Table M3. Watermelons: Acres treated, acre-treatments, times applied, rates and quantities used, single ingredient and tank-mix applications, Southwest region, 1979 a/ -- continued

Pesticides	:	:	:	:Pounds of active ingredient		
				: Acres	: Acre-	: Times
	:	:	:	: Per time	: average	:
	:	b/	:	: applied	:	:
<u>Tank-mixes (cont'd)</u>						
Disulfoton		2,260	4,530	2.0	1.0	4,580
+ naled					.6	2,960
Total		-	11,660	-	1.9	22,730
TOTAL PESTICIDES		-	121,270	-	1.0	129,160

a/ 1979 Vegetable Pesticide Survey, Natural Resource Economics Division, ESCS, USDA.

b/ Acres treated data in this column not reported for "other" and "total" because two or more materials may have been used on the same acre resulting in double counting.

c/ Quantity data not reported because Bacillus thuringiensis is expressed in terms of number of spores per gram rather than in pounds active ingredient.

