



United States
Department of
Agriculture

National
Agricultural
Statistics
Service



Sp Cr 1 (01)

Pest Management Practices 2000 Summary

May 2001

USDA



Table of Contents

	Page
Introduction	2
Highlights	3
Number of Farms and Land in Farms	5
Planted and Harvested Acres for Selected Crops	8
Pest Management Practices	
Barley	10
Corn	12
Cotton	14
Fruits & Nuts	16
Hay, Alfalfa	18
Hay, Other	20
Soybeans	22
Vegetables	24
Wheat	26
All Other Crops & Cropland Pasture	28
Survey Procedures	30
Estimation Procedures	30
Reliability	30
Glossary.	31
Survey Instrument	34
Report Features/Contacts	36

Introduction

The Pest Management Practices 2000 Summary is based largely on data compiled from a nationwide farmer survey conducted in February 2001. Results refer to responses from sampled producers concerning specific practices. The producers were first asked how many acres of a specific commodity they grew in 2000, followed by questions regarding the use of specific pest management practices, in a yes/no format. **Pests were defined as weeds, insects, and diseases.** If the respondent used a specific practice on a crop, it was assumed that the practice was used on all acres of that crop. For example, if a producer had 500 acres of wheat, and used field mapping of previous weed problems to assist in making weed management decisions, it was assumed that all 500 acres were mapped.

For this report, each question has been categorized into one of four pest management categories: prevention, avoidance, monitoring, and suppression. The actual questions used to collect these data are shown on pages 34-35.

The data are published in two tables for each crop: percent of acres receiving the specific pest management practice and percent of farms using the specific pest management practice. These percentages are published at the U.S. and regional levels. For barley, corn, soybeans, wheat, fruits and nuts, vegetables, and all other crops, the percentages refer only to farms and planted acres. For alfalfa hay and other hay, the percentages refer to farms and harvested acres.

A change in the reporting of crop varieties developed with the use of biotechnology is reflected in this publication for the first time. The percent of acres planted to corn, cotton, and soybean biotech varieties, for insect and herbicide resistance only, are carried over from the previously reported **2000 June Acreage** report. Regional data for these crops are recalculated from the 2000 June Agricultural Survey, while state-level data were published with the **2000 June Acreage** report. Biotech varietal data for all other categories in this report are published from the 2000 Pest Management Survey.

Highlights

A review of overall survey results showed widespread increases in the use of Pest Management Practices on Field Crops, Hay, and Vegetables nationwide, compared to 1999. The use of pest management practices on Fruit and Nut farms was relatively unchanged, although significant decreases for several categories were noted.

Reasons for the changes vary by crop type, but in general, farmers in the 2000 crop year responded to unusual national and regional economic and climatological events. Extremely low commodity prices combined with escalating energy and input costs placed many producers in a cost-price squeeze. Excessive moisture in some areas and resulting pest pressures, along with drought and its carryover affects in other areas, likely played significant roles in the adoption of more cost effective pest management practices by farmers. Continued educational efforts on Integrated Pest Management and precision farming practices, and a change in data collection methodology for this survey also may have had effects on overall survey results.

Barley: The leading pest management practice for barley continued to be **Rotating Crops to Control Pests**. Fifty-eight percent of the farms used this practice on 75 percent of the acres across the United States. Pest management practices used on 40 percent or more of the barley acres include **Tillage/etc. to Manage Pests, Cleaning Implements after Fieldwork, Rotating Crops to Control Pests, Scouting for Pests to Make Decisions, Field Mapping of Weed Problems, Weather Monitoring, and Alternating the Use of Pesticides**.

Corn: **Rotating Crops to Control Pests** was used on 81 percent of the corn acres and was the leading pest management practice for corn. It was also the most widely used practice in terms of number of farms, at 71 percent. **Scouting for Pests** was reported on 58 percent of the corn acres. **Alternating Pesticides** and using **Tillage/etc. to Manage Pests** were also common, each being reported on over half of the corn acres.

Cotton: **Scouting for Pests** was used by 72 percent of the cotton farms on 86 percent of the cotton acres. Prevention practices of using **Tillage/etc. to Manage Pests** and **Cleaning Implements after Fieldwork**, were used on approximately two-thirds of the farms and three-fourths of the acres. Other practices used on 60 percent or more of the acres include using **Records to Keep Track of Pests, Alternating Pesticides**, using **Scouting to Make Decisions**, and **Adjusting Planting/Harvesting Dates**.

Fruits and Nuts: **Scouting for Pests** in fruits and nuts, the most widespread pest management practice, was used by 51 percent of the fruit and nut farms on 72 percent of the acres. **Alternating Pesticides** and using **Tillage/etc. to Manage Pests** were used on 66 and 60 percent of the fruit and nut acres, respectively. Thirty-five percent of the farms **Monitored the Weather** to determine the need for any pesticide application.

Hay, Alfalfa: **Scouting for Pests** and **Cleaning Implements after Fieldwork** were the most widely used pest management practices on alfalfa acreage, each at 40 percent. **Tillage/etc. to Manage Pests**, and **Rotating Crops to Control Pests** were used on 38 and 36 percent of the alfalfa acreage, respectively.

Hay, Other: Thirty-four percent of the farms with hay, other than alfalfa, used **Tillage/etc. to Manage Pests**. **Cleaning Implements after Fieldwork** was used on 26 percent of the farms and **Scouting for Pests** was used on 14 percent of the farms.

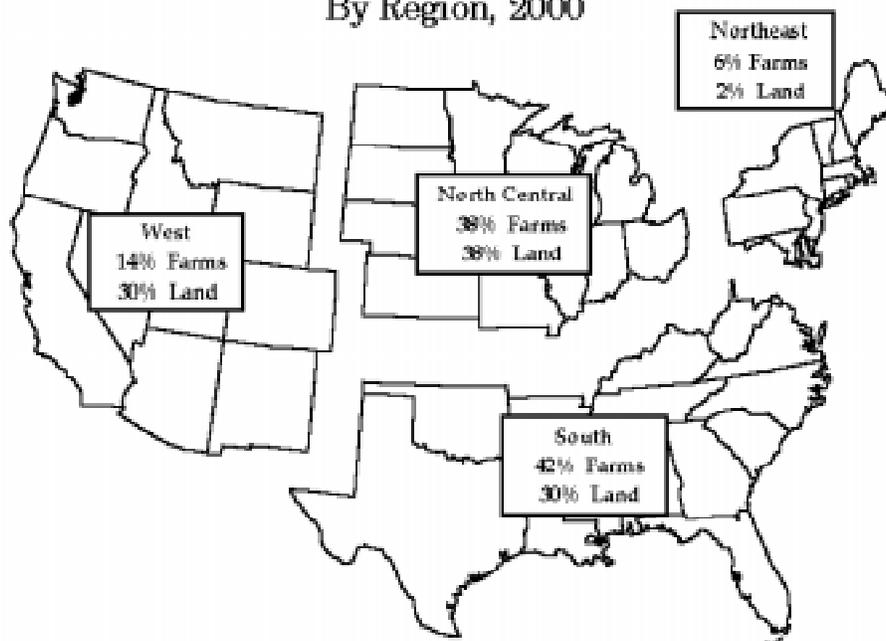
Soybeans: The most common pest management practice for soybeans was **Rotating Crops to Control Pests**, which was done on 80 percent of the soybean acres and 75 percent of the farms. Other practices used on 50 percent or more of the acres included **Scouting for Pests**, **Tillage/etc. to Manage Pests**, using **Biotechnology-developed Crop Varieties for Herbicide Resistance**, and **Cleaning Implements after Fieldwork**.

Vegetables: The most common pest management practice for vegetables was **Rotating Crops**, utilized on 87 percent of all vegetable acreage. **Scouting for Pests** was reported on 75 percent of the acres, **Alternating Pesticides** was used on 72 percent, and **Cleaning Implements after Fieldwork** was used on more than 50 percent of the acres.

Wheat: The leading pest management practice for wheat was **Rotating Crops to Control Pests**, which was used by 58 percent of the wheat farms on 65 percent of the wheat acres. **Cleaning Implements after Fieldwork** was the second most widely used practice, with 62 percent of the acres and 49 percent of the farms. Using **Tillage/etc. to Manage Pests** and **Scouting for Pests** were each reported on 50 percent or more of the acres.

All other Crops and Cropland Pasture: This group includes crops that were not specifically targeted during the survey such as sorghum, oats, rice, peanuts, etc. The most widely used pest management practice was **Rotating Crops to Control Pests**, on 57 percent of the acres. Using **Tillage/etc. to Manage Pests**, **Cleaning Implements after Fieldwork**, and **Scouting for Pests**, were each used on more than 50 percent of the acres.

Distribution of Farms and Land in Farms By Region, 2000



Regions:

Northeast	CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT
North Central	IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI
South	AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA, WV
West	AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA, WY

Alaska and Hawaii were not included in the survey.

**Number of Farms and Land in Farms
by State and Region, 2000 Crop Year**

State and Region	Number of Farms	Land in Farms
		<i>1,000 Acres</i>
CT	3,900	360
DE	2,600	580
ME	6,800	1,270
MD	12,400	2,100
MA	6,100	570
NH	3,100	420
NJ	9,600	830
NY	38,000	7,700
PA	59,000	7,700
RI	700	60
VT	6,800	1,340
Northeast	149,000	22,930
IL	78,000	27,700
IN	64,000	15,500
IA	95,000	32,800
KS	64,000	47,500
MI	52,000	10,400
MN	79,000	28,600
MO	109,000	30,000
NE	54,000	46,400
ND	30,300	39,400
OH	80,000	14,900
SD	32,500	44,000
WI	77,000	16,200
North Central	814,800	353,400

--continued

**Number of Farms and Land in Farms,
by State and Region, 2000 Crop Year (continued)**

State and Region	Number of Farms	Land in Farms
		<i>1,000 Acres</i>
AL	47,000	9,000
AR	48,000	14,600
FL	44,000	10,300
GA	50,000	11,100
KY	90,000	13,600
LA	29,500	8,100
MS	43,000	11,100
NC	57,000	9,200
OK	85,000	34,000
SC	24,000	4,700
TN	90,000	11,700
TX	226,000	130,000
VA	49,000	8,700
WV	20,500	3,600
South	903,000	279,700
AZ	7,500	26,700
CA	87,500	27,800
CO	29,000	31,600
ID	24,500	11,900
MT	27,600	56,700
NV	3,000	6,800
NM	15,200	44,000
OR	40,000	17,200
UT	15,500	11,600
WA	40,000	15,700
WY	9,200	34,600
West	299,000	284,600
US ¹	2,165,800	940,630

¹ Alaska and Hawaii were not included in the survey.

**Planted or Harvested Acres for Selected Crops,
by State and Region, 2000 Crop Year**

State and Region	Area Planted					Area Harvested	
	Barley ¹	Corn	Cotton	Soybeans	All Wheat ¹	Alfalfa Hay	Other Hay
	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>
CT		36				12	53
DE	30	165		215	65	8	9
ME	22	28				12	120
MD	55	480		520	220	65	170
MA		25				16	80
NH		15				8	50
NJ	5	90		100	40	30	100
NY	12	980		135	150	420	1,100
PA	80	1,550		400	200	650	1,150
RI		2				1	8
VT		90				50	180
Northeast	204	3,461		1,370	675	1,272	3,020
IL		11,200		10,500	950	500	350
IN		5,700		5,650	550	430	320
IA		12,300		10,700	20	1,250	450
KS	8	3,450	40	2,950	9,800	900	1,900
MI	20	2,200		2,100	530	1,000	300
MN	270	7,100		7,300	2,022	1,550	700
MO		2,850	400	5,150	1,050	470	3,250
NE	10	8,500		4,650	1,750	1,350	1,700
ND	1,900	1,080		1,900	10,170	1,350	1,100
OH	14	3,550		4,450	1,120	570	830
SD	115	4,300		4,400	3,020	2,650	1,400
WI	65	3,500		1,500	149	1,800	300
North Central	2,402	65,730	440	61,250	31,131	13,820	12,600

See footnotes at end of table.

--continued

**Planted or Harvested Acres for Selected Crops,
by State and Region, 2000 Crop Year (continued)**

State and Region	Area Planted					Area Harvested	
	Barley ¹	Corn	Cotton	Soybeans	All Wheat ¹	Alfalfa Hay	Other Hay
	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>	<i>1,000 Acres</i>
AL ²		230	590	190	140		720
AR		180	960	3,350	1,180	20	1,230
FL ²		85	130	20	13		270
GA ²		400	1,500	180	300		650
KY	9	1,330		1,200	670	250	2,200
LA ²		380	710	930	200		350
MS ²		410	1,300	1,700	250		800
NC	30	730	930	1,400	720	20	690
OK		300	280	460	6,100	330	2,100
SC ²		310	300	460	190		300
TN		650	570	1,180	550	35	2,000
TX		2,100	6,416	290	6,000	120	4,000
VA	85	470	110	500	240	120	1,200
WV		55			13	50	550
South	124	7,630	13,796	11,860	16,566	945	17,060
AZ	40	56	286		92	205	42
CA	110	540	920		600	1,020	510
CO	110	1,350			2,548	900	500
ID	750	195			1,370	1,130	260
MT	1,250	60			5,330	1,200	800
NV	4	4			18	265	225
NM		150	94.5		470	290	90
OR	150	55			880	390	690
UT	95	64			173	550	150
WA	500	155			2,475	470	310
WY	105	95			201	620	520
West	3,114	2,724	1,300.5		14,157	7,040	4,097
US ³	5,844	79,545	15,536.5	74,496	62,529	23,077	36,777

¹ Includes area planted in preceding fall.

² Alfalfa and alfalfa mixtures are included in all other hay.

³ Alaska and Hawaii were not included in the survey.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Barley, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	46	59	29	45	43	49
Remove or plow down crop residue	16	36	25	34	31	34
Clean implements after fieldwork	40	81	35	74	49	74
Water management practices	*	13	*	21	7	18
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	6	37	*	23	23	27
Rotate crops to control pests	46	80	35	75	67	75
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	12	52	*	19	24	29
Grow trap crop to control insects				1	**	**
Monitoring Practices:						
Scouted for pests	34	52	18	63	60	58
Records kept to track pests	31	24	*	23	25	23
Field mapping of weed problems	11	47	*	55	22	50
Soil analysis to detect pests	15	*	*	8	6	9
Pheromones to monitor pests	*	*		*	**	1
Weather monitoring	14	50	45	35	19	40
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	29	37	*	16	16	23
Biological pesticides	*	*	*	4	1	4
Beneficial organisms		*	*	7	1	8
Maintain ground cover or physical barriers	4	42	17	20	13	26
Adjust planting methods	*	12	*	5	6	7
Alternate pesticides	11	61	32	49	44	51
Pheromones to disrupt mating	*				**	*

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Barley, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	24	37	42	47	35	40
Remove or plow down crop residue	13	23	35	36	25	29
Clean implements after fieldwork	31	55	51	63	32	55
Water management practices	*	5	*	17	6	12
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	*	18	3	20	14	15
Rotate crops to control pests	50	62	47	60	59	58
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	6	30	*	21	12	23
Grow trap crop to control insects				**	**	**
Monitoring Practices:						
Scouted for pests	26	45	14	50	40	41
Records kept to track pests	18	20	*	20	12	20
Field mapping of weed problems	15	26	*	32	14	27
Soil analysis to detect pests	8	*	*	13	4	10
Pheromones to monitor pests	*	*		*	**	**
Weather monitoring	11	24	47	20	12	24
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	16	21	*	19	8	19
Biological pesticides	*	*	*	5	2	7
Beneficial organisms		*	*	4	2	5
Maintain ground cover or physical barriers	2	24	7	21	11	18
Adjust planting methods	*	*	0	6	4	7
Alternate pesticides	11	34	46	32	28	32
Pheromones to disrupt mating	*				**	*

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Corn, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	44	53	53	61	45	53
Remove or plow down crop residue	36	25	47	41	22	28
Clean implements after fieldwork	44	48	52	54	36	48
Water management practices	9	19	32	42	10	21
Avoidance Practices:						
Biotech varieties with insect resistance only	11	19	8	7	17	18
Adjust planting/harvesting dates	13	17	29	19	11	17
Rotate crops to control pests	70	82	74	66	77	81
Biotech varieties with pathogen/nematode resistance only	2	**	*	*	**	**
Alternate planting locations	25	26	41	27	14	28
Grow trap crop to control insects	2	5	15	3	3	6
Monitoring Practices:						
Scouted for pests	37	59	55	67	55	58
Records kept to track pests	19	28	44	43	23	30
Field mapping of weed problems	32	32	21	28	17	30
Soil analysis to detect pests	10	22	28	22	16	22
Pheromones to monitor pests	**	4	**	4	2	4
Weather monitoring	26	31	27	35	16	30
Suppression Practices:						
Biotech varieties with herbicide resistance only	4	5	7	8	8	6
Scouting used to make decisions	14	35	40	28	19	34
Biological pesticides	7	18	20	13	5	18
Beneficial organisms	3	2	7	8	2	3
Maintain ground cover or physical barriers	11	25	17	32	13	24
Adjust planting methods	5	12	13	11	8	12
Alternate pesticides	36	51	52	49	44	50
Pheromones to disrupt mating	*	**	**	*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Corn, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	30	49	47	52	38	47
Remove or plow down crop residue	27	23	42	39	20	27
Clean implements after fieldwork	37	45	48	53	29	45
Water management practices	3	14	18	39	6	14
Avoidance Practices:						
Biotech varieties with insect resistance only	17	28	5	6	25	23
Adjust planting/harvesting dates	12	15	21	18	7	15
Rotate crops to control pests	54	77	53	59	67	71
Biotech varieties with pathogen/nematode resistance only	4	1	*	*	**	1
Alternate planting locations	29	22	29	24	9	24
Grow trap crop to control insects	2	3	7	4	2	3
Monitoring Practices:						
Scouted for pests	33	45	31	56	42	43
Records kept to track pests	10	17	22	27	12	17
Field mapping of weed problems	27	23	14	16	10	22
Soil analysis to detect pests	11	16	16	18	8	16
Pheromones to monitor pests	**	1	**	3	**	1
Weather monitoring	21	24	21	32	10	23
Suppression Practices:						
Biotech varieties with herbicide resistance only	13	16	7	14	13	15
Scouting used to make decisions	8	21	21	17	10	20
Biological pesticides	13	11	15	7	3	12
Beneficial organisms	2	2	5	3	**	3
Maintain ground cover or physical barriers	12	22	17	21	9	20
Adjust planting methods	5	11	8	11	5	10
Alternate pesticides	30	40	31	36	32	38
Pheromones to disrupt mating	*	**	**	*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Cotton, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests		74	72	92	69	73
Remove or plow down crop residue		32	49	92	55	49
Clean implements after fieldwork		52	77	94	61	77
Water management practices		53	57	88	16	57
Avoidance Practices:						
Biotech varieties with insect resistance only		*	15	12	26	15
Adjust planting/harvesting dates		11	64	*	21	63
Rotate crops to control pests		79	39	92	40	41
Biotech varieties with pathogen/nematode resistance only			**	*	1	**
Alternate planting locations		*	37	*	12	37
Grow trap crop to control insects		*	12	*	6	11
Monitoring Practices:						
Scouted for pests		72	85	97	78	86
Records kept to track pests		61	70	51	59	69
Field mapping of weed problems		45	44	*	17	44
Soil analysis to detect pests		*	42	*	18	42
Pheromones to monitor pests		*	29	55	63	30
Weather monitoring		42	57	58	22	56
Suppression Practices:						
Biotech varieties with herbicide resistance only		39	27	15	32	26
Scouting used to make decisions		62	62	52	48	62
Biological pesticides		35	48	15	15	47
Beneficial organisms		*	33	*	5	32
Maintain ground cover or physical barriers		*	25	*	9	26
Adjust planting methods			9	*	9	10
Alternate pesticides		70	67	94	44	67
Pheromones to disrupt mating		*	15	*	16	14

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Cotton, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests		61	64	74	62	65
Remove or plow down crop residue		59	57	86	53	58
Clean implements after fieldwork		29	70	87	55	69
Water management practices		48	42	74	13	43
Avoidance Practices:						
Biotech varieties with insect resistance only		*	43	38	30	42
Adjust planting/harvesting dates		9	43	*	18	42
Rotate crops to control pests		67	47	73	44	48
Biotech varieties with pathogen/nematode resistance only			1	*	1	2
Alternate planting locations		*	36	*	13	36
Grow trap crop to control insects		*	16	*	6	16
Monitoring Practices:						
Scouted for pests		90	71	89	71	72
Records kept to track pests		32	57	45	45	56
Field mapping of weed problems		24	28	*	11	27
Soil analysis to detect pests		*	32	*	16	32
Pheromones to monitor pests		*	36	41	58	35
Weather monitoring		23	39	39	22	39
Suppression Practices:						
Biotech varieties with herbicide resistance only		50	39	62	44	40
Scouting used to make decisions		61	49	43	37	49
Biological pesticides		34	37	9	13	36
Beneficial organisms		*	21	*	6	21
Maintain ground cover or physical barriers		*	21	*	9	22
Adjust planting methods			7	*	7	7
Alternate pesticides		60	57	85	39	58
Pheromones to disrupt mating		*	15	*	16	15

* Insufficient reports to publish data.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Fruits and Nuts, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	26	28	25	78	73	60
Remove or plow down crop residue	*	*	63	31	30	38
Clean implements after fieldwork	24	*	62	42	44	45
Water management practices	*	*	9	37	44	29
Avoidance Practices:						
Biotech varieties with insect resistance only				*	**	*
Adjust planting/harvesting dates	*	*	*	30	6	21
Rotate crops to control pests	*	*	*	5	4	5
Biotech varieties with pathogen/nematode resistance only				*	**	*
Alternate planting locations	*	*	*	5	12	4
Grow trap crop to control insects		*		5	6	4
Monitoring Practices:						
Scouted for pests	79	88	30	87	92	72
Records kept to track pests	34	72	5	59	65	44
Field mapping of weed problems	*	*	*	26	22	20
Soil analysis to detect pests	*	57	16	45	43	38
Pheromones to monitor pests	*	69	*	49	34	37
Weather monitoring	77	30	18	66	53	54
Suppression Practices:						
Biotech varieties with herbicide resistance only		*	*	*	**	*
Scouting used to make decisions	88	79	10	48	47	41
Biological pesticides	19	75	*	40	21	30
Beneficial organisms	*	*	7	20	21	16
Maintain ground cover or physical barriers	*	*	2	48	36	33
Adjust planting methods		68	*	3	8	5
Alternate pesticides	77	80	33	77	73	66
Pheromones to disrupt mating	*	*	*	26	15	18

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Fruits and Nuts, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	19	68	39	53	64	47
Remove or plow down crop residue	*	*	30	19	20	22
Clean implements after fieldwork	38	*	26	28	37	27
Water management practices	*	*	16	27	20	20
Avoidance Practices:						
Biotech varieties with insect resistance only				*	**	*
Adjust planting/harvesting dates	*	*	*	15	4	12
Rotate crops to control pests	*	*	*	7	3	6
Biotech varieties with pathogen/nematode resistance only				*	1	*
Alternate planting locations	*	*	*	4	5	4
Grow trap crop to control insects		*		6	2	4
Monitoring Practices:						
Scouted for pests	67	46	25	66	72	51
Records kept to track pests	13	27	9	34	36	24
Field mapping of weed problems	*	*	*	18	9	11
Soil analysis to detect pests	*	5	8	21	19	15
Pheromones to monitor pests	*	13	*	27	17	16
Weather monitoring	46	35	19	43	36	35
Suppression Practices:						
Biotech varieties with herbicide resistance only		*	*	*	**	*
Scouting used to make decisions	70	35	19	29	24	29
Biological pesticides	18	37	*	26	8	19
Beneficial organisms	*	*	9	24	11	17
Maintain ground cover or physical barriers	*	*	16	35	29	26
Adjust planting methods		23	*	8	4	10
Alternate pesticides	65	45	25	53	53	44
Pheromones to disrupt mating	*	*	*	15	6	10

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Hay, Alfalfa 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	32	35	45	44	22	38
Remove or plow down crop residue	20	12	21	19	7	15
Clean implements after fieldwork	33	38	43	44	16	40
Water management practices	2	12	17	25	6	16
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	14	14	15	19	8	16
Rotate crops to control pests	40	37	19	33	28	36
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	17	11	8	11	4	11
Grow trap crop to control insects	*	**		2	**	1
Monitoring Practices:						
Scouted for pests	37	38	39	45	29	40
Records kept to track pests	12	10	4	13	10	11
Field mapping of weed problems	16	13	5	20	7	15
Soil analysis to detect pests	7	8	5	5	5	7
Pheromones to monitor pests	*	**		2	**	1
Weather monitoring	25	14	23	20	8	17
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	12	16	17	9	10	13
Biological pesticides	*	2	*	4	1	3
Beneficial organisms	*	3		11	1	6
Maintain ground cover or physical barriers	12	15	9	15	4	15
Adjust planting methods	2	2	*	6	2	3
Alternate pesticides	21	16	23	23	12	19
Pheromones to disrupt mating		**		*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Hay, Alfalfa 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	25	37	32	51	22	39
Remove or plow down crop residue	20	11	16	18	5	13
Clean implements after fieldwork	31	35	44	42	14	36
Water management practices	3	7	16	25	4	11
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	5	14	11	17	5	14
Rotate crops to control pests	32	31	22	31	27	31
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	11	9	6	11	3	10
Grow trap crop to control insects	*	**		**	**	**
Monitoring Practices:						
Scouted for pests	21	31	36	42	23	32
Records kept to track pests	8	6	7	10	6	7
Field mapping of weed problems	13	11	6	20	4	13
Soil analysis to detect pests	5	8	4	5	3	6
Pheromones to monitor pests	*	**		**	**	**
Weather monitoring	29	11	11	20	5	15
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	4	11	9	7	5	9
Biological pesticides	*	2	*	4	**	3
Beneficial organisms	*	2		7	**	3
Maintain ground cover or physical barriers	13	13	13	18	3	14
Adjust planting methods	3	3	*	6	1	4
Alternate pesticides	18	16	16	16	7	16
Pheromones to disrupt mating		**		*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Hay, Other 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	21	29	35	40	13	32
Remove or plow down crop residue	12	11	13	17	2	13
Clean implements after fieldwork	25	22	29	44	8	28
Water management practices	2	11	7	23	2	9
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	3	5	6	15	1	6
Rotate crops to control pests	15	15	4	18	4	10
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	4	6	4	4	1	4
Grow trap crop to control insects		**	*	*	*	*
Monitoring Practices:						
Scouted for pests	10	21	14	32	8	18
Records kept to track pests	2	8	6	9	2	7
Field mapping of weed problems	10	5	4	20	**	6
Soil analysis to detect pests	6	2	8	6	1	6
Pheromones to monitor pests	*	*	*	*	**	*
Weather monitoring	14	7	12	26	1	12
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	3	4	5	3	**	4
Biological pesticides	4	3	5	3	**	4
Beneficial organisms		6	**	5	**	3
Maintain ground cover or physical barriers	10	13	5	18	1	9
Adjust planting methods	1	5	1	5	**	3
Alternate pesticides	8	8	9	14	2	9
Pheromones to disrupt mating	*	*	*	*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Hay, Other 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	36	37	30	49	11	34
Remove or plow down crop residue	11	10	10	15	2	10
Clean implements after fieldwork	23	28	24	41	7	26
Water management practices	3	7	4	15	1	5
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	3	7	4	13	**	5
Rotate crops to control pests	18	18	4	19	4	10
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	3	5	2	4	**	3
Grow trap crop to control insects		**	*	*	**	*
Monitoring Practices:						
Scouted for pests	9	17	10	42	6	14
Records kept to track pests	3	4	3	9	**	4
Field mapping of weed problems	4	6	3	19	**	5
Soil analysis to detect pests	6	3	6	6	**	6
Pheromones to monitor pests	*	*	*	*	**	**
Weather monitoring	15	7	8	14	**	9
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	2	5	3	4	**	3
Biological pesticides	2	3	2	5	**	2
Beneficial organisms		**	**	8	**	1
Maintain ground cover or physical barriers	10	15	4	15	1	8
Adjust planting methods	5	3	**	8	**	2
Alternate pesticides	6	10	5	7	2	6
Pheromones to disrupt mating	*	*	*	*	**	*

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Soybeans, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	60	52	63	*	48	54
Remove or plow down crop residue	5	18	49	*	20	23
Clean implements after fieldwork	50	46	68	*	40	50
Water management practices	18	15	38		8	19
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	7	16	41		9	20
Rotate crops to control pests	72	84	62	93	76	80
Biotech varieties with pathogen/nematode resistance only	**	1	**	*	2	**
Alternate planting locations	10	25	39	*	14	27
Grow trap crop to control insects	*	4	2		**	4
Monitoring Practices:						
Scouted for pests	47	56	56	*	53	56
Records kept to track pests	13	23	37	*	17	25
Field mapping of weed problems	4	28	24		16	27
Soil analysis to detect pests	3	28	26	*	17	27
Pheromones to monitor pests	**	4	**		**	4
Weather monitoring	15	32	35	*	15	32
Suppression Practices:						
Biotech varieties with herbicide resistance only	60	55	49	*	48	54
Scouting used to make decisions	12	32	45	*	16	34
Biological pesticides	2	7	6		**	7
Beneficial organisms	*	2	*		1	3
Maintain ground cover or physical barriers	3	24	22	*	12	23
Adjust planting methods	2	18	26	*	16	19
Alternate pesticides	24	46	46	*	39	45
Pheromones to disrupt mating	*	**	**		**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Soybeans, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	39	48	50	79	41	48
Remove or plow down crop residue	10	19	39	46	16	21
Clean implements after fieldwork	45	45	59	76	33	47
Water management practices	6	14	23		6	15
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	11	15	22		6	15
Rotate crops to control pests	70	78	55	93	73	75
Biotech varieties with pathogen/nematode resistance only	4	3	2	*	2	3
Alternate planting locations	27	23	30	*	9	24
Grow trap crop to control insects	*	2	6		**	2
Monitoring Practices:						
Scouted for pests	43	45	41	*	46	44
Records kept to track pests	21	17	23	*	12	18
Field mapping of weed problems	7	22	13		10	20
Soil analysis to detect pests	4	19	20	*	10	19
Pheromones to monitor pests	**	2	**		**	1
Weather monitoring	23	24	27	*	9	25
Suppression Practices:						
Biotech varieties with herbicide resistance only	78	60	53	*	61	60
Scouting used to make decisions	11	21	25	*	10	21
Biological pesticides	4	5	4		1	5
Beneficial organisms	*	1	11		1	2
Maintain ground cover or physical barriers	7	20	16	*	9	19
Adjust planting methods	4	14	12	*	12	14
Alternate pesticides	22	35	31	*	33	34
Pheromones to disrupt mating	*	**	**		**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Vegetables, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	70	26	34	51	61	45
Remove or plow down crop residue	23	53	32	50	56	43
Clean implements after fieldwork	39	55	39	67	49	54
Water management practices	35	32	29	61	40	43
Avoidance Practices:						
Biotech varieties with insect resistance only		*	*	*	4	*
Adjust planting/harvesting dates	31	10	18	25	28	21
Rotate crops to control pests	83	94	88	82	77	87
Biotech varieties with pathogen/nematode resistance only		*	*	*	5	*
Alternate planting locations	26	50	31	37	32	37
Grow trap crop to control insects	*	*	*	4	2	4
Monitoring Practices:						
Scouted for pests	56	64	84	87	81	75
Records kept to track pests	36	37	31	41	56	37
Field mapping of weed problems	24	26	52	29	25	31
Soil analysis to detect pests	28	16	26	59	35	37
Pheromones to monitor pests	41	*	*	22	9	18
Weather monitoring	52	44	26	41	38	41
Suppression Practices:						
Biotech varieties with herbicide resistance only	*	*	*	*	**	**
Scouting used to make decisions	50	40	37	24	40	35
Biological pesticides	38	10	54	23	13	27
Beneficial organisms	3	1	38	20	12	15
Maintain ground cover or physical barriers	53	26	19	33	19	33
Adjust planting methods	6	46	17	23	16	25
Alternate pesticides	74	46	81	83	60	72
Pheromones to disrupt mating	*	*	*	6	2	4

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Vegetables, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	56	55	52	29	39	49
Remove or plow down crop residue	47	45	48	57	34	49
Clean implements after fieldwork	23	37	54	18	28	31
Water management practices	18	19	37	70	15	34
Avoidance Practices:						
Biotech varieties with insect resistance only		*	*	*	10	*
Adjust planting/harvesting dates	5	22	13	21	18	13
Rotate crops to control pests	73	75	38	80	62	67
Biotech varieties with pathogen/nematode resistance only		*	*	*	**	*
Alternate planting locations	41	38	26	26	27	34
Grow trap crop to control insects	*	*	*	11	5	4
Monitoring Practices:						
Scouted for pests	48	67	44	46	52	50
Records kept to track pests	5	20	14	29	19	15
Field mapping of weed problems	5	37	22	17	6	17
Soil analysis to detect pests	3	5	31	23	13	14
Pheromones to monitor pests	2	*	*	14	4	5
Weather monitoring	35	21	21	21	16	26
Suppression Practices:						
Biotech varieties with herbicide resistance only	*	*	*	*	2	**
Scouting used to make decisions	4	22	12	12	15	11
Biological pesticides	22	27	11	18	16	19
Beneficial organisms	15	17	8	53	5	22
Maintain ground cover or physical barriers	64	33	17	29	18	40
Adjust planting methods	44	10	26	15	9	27
Alternate pesticides	60	33	42	24	30	43
Pheromones to disrupt mating	*	*	*	10	2	3

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
Wheat, All 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	70	55	53	51	43	54
Remove or plow down crop residue	5	33	47	36	30	36
Clean implements after fieldwork	56	62	57	67	49	62
Water management practices	7	13	27	13	6	16
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	10	35	27	35	23	32
Rotate crops to control pests	36	78	41	65	56	65
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	10	35	19	25	17	28
Grow trap crop to control insects	*	3	3	1	**	3
Monitoring Practices:						
Scouted for pests	23	48	40	65	46	50
Records kept to track pests	20	22	21	29	16	24
Field mapping of weed problems	5	28	13	42	13	27
Soil analysis to detect pests	3	13	14	11	7	13
Pheromones to monitor pests	*	**	*	**	**	**
Weather monitoring	6	33	31	38	15	33
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	20	30	20	22	14	26
Biological pesticides	8	8	3	2	1	5
Beneficial organisms	*	2	2	5	**	3
Maintain ground cover or physical barriers	5	34	22	36	14	31
Adjust planting methods	2	12	10	13	7	11
Alternate pesticides	15	43	30	50	31	41
Pheromones to disrupt mating	*	*	*	*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
Wheat, All 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	46	46	41	50	36	45
Remove or plow down crop residue	34	23	33	32	23	28
Clean implements after fieldwork	28	48	50	60	33	49
Water management practices	2	11	16	16	4	12
Avoidance Practices:						
Biotech varieties with insect resistance only						
Adjust planting/harvesting dates	18	25	18	24	16	22
Rotate crops to control pests	63	71	27	62	48	58
Biotech varieties with pathogen/nematode resistance only						
Alternate planting locations	18	24	14	18	10	20
Grow trap crop to control insects	*	2	4	1	**	2
Monitoring Practices:						
Scouted for pests	32	38	26	57	31	37
Records kept to track pests	10	14	10	26	9	14
Field mapping of weed problems	9	21	8	30	6	18
Soil analysis to detect pests	3	11	9	10	4	10
Pheromones to monitor pests	*	**	*	**	**	**
Weather monitoring	35	23	16	30	9	23
Suppression Practices:						
Biotech varieties with herbicide resistance only						
Scouting used to make decisions	8	19	13	18	8	16
Biological pesticides	4	4	3	6	**	4
Beneficial organisms	*	2	2	4	**	2
Maintain ground cover or physical barriers	12	25	17	25	9	22
Adjust planting methods	2	10	5	9	4	7
Alternate pesticides	13	31	19	37	18	27
Pheromones to disrupt mating	*	*	*	*	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Acres Receiving Practice,
All Other Crops and Cropland Pasture, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Acres</i>					
Prevention Practices:						
Tillage/etc. to manage pests	26	43	56	59	43	52
Remove or plow down crop residue	11	23	41	33	31	33
Clean implements after fieldwork	15	58	54	57	42	55
Water management practices	7	10	38	29	15	25
Avoidance Practices:						
Biotech varieties with insect resistance only		1	**	*	**	**
Adjust planting/harvesting dates	*	35	35	16	12	30
Rotate crops to control pests	43	72	47	53	48	57
Biotech varieties with pathogen/nematode resistance only		*	*	*	**	**
Alternate planting locations	12	40	30	30	15	32
Grow trap crop to control insects	*	4	**	**	**	2
Monitoring Practices:						
Scouted for pests	16	55	56	61	43	55
Records kept to track pests	8	26	40	28	18	31
Field mapping of weed problems	7	28	22	35	11	26
Soil analysis to detect pests	6	13	30	28	12	22
Pheromones to monitor pests	*	3	4	10	1	4
Weather monitoring	19	36	33	37	18	35
Suppression Practices:						
Biotech varieties with herbicide resistance only	*	2	3	**	1	2
Scouting used to make decisions	8	32	39	19	20	32
Biological pesticides	*	6	10	11	2	9
Beneficial organisms	*	4	16	19	2	12
Maintain ground cover or physical barriers	19	32	24	27	12	27
Adjust planting methods	5	22	18	13	8	18
Alternate pesticides	13	45	46	49	30	45
Pheromones to disrupt mating		*	4	2	**	2

* Insufficient reports to publish data.

** Less than 1 percent.

**Pest Management Practices,
Percent of Farms Utilizing Practice,
All Other Crops and Cropland Pasture, 2000**

Practice	Region				United States	
	North-east	North Central	South	West	1999	2000
	<i>Percent of Farms</i>					
Prevention Practices:						
Tillage/etc. to manage pests	37	36	38	37	33	37
Remove or plow down crop residue	27	22	28	17	24	23
Clean implements after fieldwork	21	38	38	26	30	34
Water management practices	10	9	16	17	8	13
Avoidance Practices:						
Biotech varieties with insect resistance only		**	1	*	2	**
Adjust planting/harvesting dates	*	16	14	9	7	12
Rotate crops to control pests	40	50	26	28	29	37
Biotech varieties with pathogen/nematode resistance only		*	*	*	2	**
Alternate planting locations	17	23	18	13	9	19
Grow trap crop to control insects	*	3	1	1	**	*
Monitoring Practices:						
Scouted for pests	30	39	28	33	27	33
Records kept to track pests	18	11	16	13	7	14
Field mapping of weed problems	10	15	10	13	4	12
Soil analysis to detect pests	15	5	12	10	5	9
Pheromones to monitor pests	*	1	2	4	**	2
Weather monitoring	38	17	21	16	8	21
Suppression Practices:						
Biotech varieties with herbicide resistance only	*	1	3	**	3	1
Scouting used to make decisions	25	14	12	10	6	14
Biological pesticides	2	5	10	4	2	6
Beneficial organisms	*	3	6	9	2	5
Maintain ground cover or physical barriers	39	26	17	18	10	23
Adjust planting methods	15	10	12	7	6	10
Alternate pesticides	22	24	26	21	16	24
Pheromones to disrupt mating		*	1	**	**	**

* Insufficient reports to publish data.

** Less than 1 percent.

Survey Procedures: The estimates in this report are based on an Integrated Pest Management (IPM) Survey conducted in February 2001. This probability survey used an area frame sample design with 6,930 segments, or parcels of land. Each segment averaged approximately one square mile in size. Telephone enumerators conducting the survey contacted a subsample of 7,808 farmers having operations within the segments and collected pest management practices for their entire operation. Estimates for each pest management practice were then calculated, using the selection probability of each segment.

Data collection methodology for the 2000 IPM Survey represented a departure from the previous three years. Prior to 2000, collection of survey data from farmers was conducted by personal interview during November-December of the current year. The 2000 survey was conducted solely with computer-assisted telephone interviews in February of the following year.

Estimation Procedures: For each crop/pest management practice combination, two ratios are calculated: percent of farms and percent of acres covered by that practice. If a farm operator used a given practice on a specific crop, all acres planted to that crop were considered to have been “treated” with the given pest management practice.

These data will not be revised even if there are subsequent revisions to acreage for a given crop.

Reliability: The probability nature of the survey provides estimates that are statistically representative of pest management practices on the targeted crops. Reliability of survey results is affected by sampling variability and non-sampling errors. The sampling variability, expressed as a percentage of the estimate, is referred to as the coefficient of variation (cv).

Sampling variability is a measure of how the estimates would differ if other samples had been drawn and utilized. Sampling variability of the estimates differs considerably by crop/pest management practice combination. Some practices are seldom used on certain crops. In general, the more common the pest management practice, the smaller the sampling variability. For commonly used pest management practices, cv’s will range from 1-20 percent at the U.S. level and 3-60 percent at the Regional level. Some rarer items could have cv’s above 100 percent. These items generally have insufficient data for publication and are noted with an asterisk (*).

Non-sampling errors occur during a survey process, and unlike sampling variability, are difficult to measure. They may be caused by interviewers failing to follow instructions, poorly worded questions, non-response, problematic survey procedures, or data handling mistakes between collection and publication. In this survey, all survey procedures and analyses were carried out in consistent and orderly manner to minimize the occurrence of these types of errors.

Glossary

Agricultural chemicals: Active ingredients in fertilizers and pesticides.

Allelopathic: The release of chemical compounds from a plant that will inhibit the growth of another plant, such as weeds.

Beneficial Insects: Insects collected and introduced into locations because of their value in biologic control as prey on harmful insects and parasites.

Chemigation: Application of an agricultural chemical by injecting it into irrigation water.

Crop year: The period immediately following harvest for the previous crop through harvest of the current crop.

Cultivars: A horticulturally or agriculturally derived variety of a plant, as distinguished from a natural variety.

Farm: Any establishment from which \$1,000 or more of agricultural products were sold or would normally be sold during the year. Government payments are included in sales. Places with all acreage enrolled in set aside or other government programs are considered operating.

Fungi: A lower form of parasitic plant life which often reduces crop production and/or lowers the grade quality of its host.

Land in Farms: All land operated as part of a farming operation during the year. It includes crop and livestock acreage, wasteland, woodland, pasture, land in summer fallow, idle cropland, and land enrolled in the Conservation Reserve Program and other set aside or commodity acreage programs. It excludes public, industrial, and grazing association land and nonagricultural land. It excludes all land operated by establishments not qualifying as farms.

Nematodes: Microscopic, worm-shaped parasitic animals. Damage to many crops can be severe.

Pesticides: As defined by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), includes any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

Pheromone: A chemical substance produced by an insect which serves as a stimulus to other individuals of the same species for one or more behavioral responses.

PEST MANAGEMENT CATEGORIES:

Prevention: Is the practice of keeping a pest population from infesting a crop or field. It includes such tactics as using pest-free seeds and transplants, preventing weeds from reproducing, choosing cultivars with genetic resistance to insects or disease, irrigation scheduling to avoid situations conducive to disease development, cleaning tillage and harvesting equipment between fields or operations, using field sanitation procedures, and eliminating alternate hosts or sites for insect pests and disease organisms.

Glossary (continued)

The following questions were categorized as prevention practices:

Did you clean tillage or harvesting implements after completing fieldwork for the purpose of reducing the spread of weeds, diseases or other pests?

Did you remove or plow down crop residues to control pests?

Did you use practices such as tilling, mowing, burning, or chopping of field edges, lanes, ditches, roadways or fence lines to manage pests?

Did you use water management practices, such as controlled drainage or irrigation scheduling, excluding chemigation, to control pests?

Avoidance: May be practiced when pest populations exist in a field or site but the impact of the pest on the crop can be avoided through some cultural practice. Examples of avoidance tactics include crop rotation such that the crop of choice is not a host for the pest, choosing cultivars with genetic resistance to pests, using trap crops, choosing cultivars with maturity dates that may allow harvest before pest populations develop, fertilization programs to promote rapid crop development, and simply not planting certain areas of fields where pest populations are likely to cause crop failure. Some tactics for prevention and avoidance strategies may overlap.

The following questions were categorized as avoidance practices:

Did you use any crop varieties that were genetically modified to be resistant to insects (Bt, etc.)?

Did you adjust planting or harvesting dates to control pests?

Did you rotate crops for the purpose of controlling pests?

Did you use any crop varieties that were genetically modified to be resistant to plant pathogens or nematodes causing plant diseases?

Did you choose planting locations to avoid cross infestation of insects or disease?

Did you grow a trap crop to help control insects?

Monitoring: Includes proper identification of pests through surveys or scouting programs, including trapping, weather monitoring, and soil testing where appropriate.

The following questions were categorized as monitoring practices:

Was this crop scouted for pests (weeds, insects or disease) using a systematic method?

Did you use field mapping of previous weed problems to assist you in making weed management decisions?

Glossary (continued)

Did you use soil analysis to detect the presence of soil-borne pests or pathogens?

Did you use pheromones to monitor the presence of pests by trapping?

Did you use weather monitoring to predict the need for pesticide applications?

Suppression: Tactics include cultural practices such as narrow row spacings or optimized in-row plant populations, alternative tillage approaches such as no-till or strip-till systems, cover crops or mulches, or using crops with allelopathic potential in the rotation. Physical suppression tactics may include cultivation or mowing for weed control, baited or pheromone traps for certain insects, and temperature management or exclusion devices for insect and disease management. Biological controls, including mating disruption for insects, could be considered as alternatives to conventional pesticides, especially where long-term control of an especially troublesome pest species can be obtained. Chemical pesticides are important and some use will remain necessary. However, pesticides should be applied as a last resort in suppression systems.

The following questions were categorized as suppression practices:

Did you use any crop varieties that were genetically modified to be resistant to specific herbicides (Roundup Ready, Liberty Link, Poast-Protected corn, STS soybean, IT corn)?

Did you use scouting data and compare it to university or extension guidelines for infestation thresholds to determine when to take measures to control pests?

Did you use beneficial organisms (insects, nematodes or fungi) to control pests?

Did you use topically applied biological pesticides such as Bt (*Bacillus thuringiensis*), insect growth regulators, neem or other natural products to control pests?

Did you maintain ground covers, mulches or physical barriers to reduce pest problems?

Did you adjust row spacing, plant density or row direction to control pests?

Did you alternate pesticides to keep pests from becoming resistant to pesticides (use pesticides with different mechanisms of action)?

Did you use pheromones to control pests by disrupting mating?

SECTION 3 - PEST MANAGEMENT PRACTICES

1.	[Were any crops planted or harvested, hay cut, or cropland pasture reported on total acres operated?]	
	<input type="checkbox"/> YES - [Continue.] <input type="checkbox"/> NO - [Enter 3 in Code Box 463, and go to Section 4.]	

	000
Completion Code for Section 3 Only	463
COLUMNS IN TABLE	440

CROP CODES FOR ITEM 3		
191 - Corn	190 - Barley	142 - All Vegetables
26 - Soybeans	1 - Alfalfa Hay	312 - All Fruits & Nuts
8 - Cotton	11 - Other Hay	401 - All Other crops & Cropland Pasture
34 - Wheat	225 - Wild Hay	

		COLUMN NUMBER					
2.	[List all crops grown during the 2000 crop year.]	Crop	401	402	403	404	405
3.	[Enter crop code for each crop.]	Crop Code	441	441	441	441	441

Now I have some questions about pest management practices you may have used on this operation for any crops grown during 2000. **By pests, we mean weeds, insects and diseases.** Were any of the following practices used on your operation by you or anyone else?

4.	Did you use any crop varieties that were genetically modified to be resistant to:	If YES, how many acres:					
a.	specific herbicides (Roundup-Ready, Liberty-Link, IT-corn)?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">443</td> </tr> </table>	443	443	443	443	443
443	443	443	443	443			
b.	insects (Bt., etc.)?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">444</td> </tr> </table>	444	444	444	444	444
444	444	444	444	444			
c.	plant pathogens or nematodes causing plant diseases	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">445</td> </tr> </table>	445	445	445	445	445
445	445	445	445	445			
If YES, enter Code=1 for each crop							
5.	Was this crop scouted for pests (weeds, insects or disease) using a systematic method?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">446</td> </tr> </table>	446	446	446	446	446
446	446	446	446	446			
6.	Were electronic or written records kept to track the activity or numbers of different pests?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">447</td> </tr> </table>	447	447	447	447	447
447	447	447	447	447			
7.	Did you use scouting data and compare it to university or extension guidelines for infestation thresholds to determine when to take measures to control pests?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">448</td> </tr> </table>	448	448	448	448	448
448	448	448	448	448			
8.	Did you use field mapping of previous weed problems to assist you in making weed management decisions?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">449</td> </tr> </table>	449	449	449	449	449
449	449	449	449	449			
9.	Did you use soil analysis to detect the presence of soil-borne pests or pathogens?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">450</td> </tr> </table>	450	450	450	450	450
450	450	450	450	450			
10.	Did you use beneficial organisms (insects, nematodes or fungi) to control pests?	<table style="width: 100%; text-align: center;"> <tr> <td style="width: 20%;">453</td> </tr> </table>	453	453	453	453	453
453	453	453	453	453			

SECTION 3 - PEST MANAGEMENT PRACTICES (CONTINUED)

		COLUMN NUMBER				
		401	402	403	404	405
Crop						
		If YES, enter Code=1 for each crop				
11.	Did you use pheromones to monitor pests by trapping?	481	481	481	481	481
12.	Did you use pheromones to control pests by disrupting mating?	482	482	482	482	482
13.	Did you use topically applied biological pesticides such as Bt (<i>Bacillus thuringiensis</i>), insect growth regulators, neem or other natural products to control pests?	452	452	452	452	452
14.	Did you use water management practices, such as controlled drainage or irrigation scheduling, excluding chemigation, to control pests?	458	458	458	458	458
15.	Did you remove or plow down crop residues to control pests?	456	456	456	456	456
16.	Did you use practices such as tilling, mowing, burning, or chopping of field edges, lanes, ditches, roadways or fence lines to manage pests?	455	455	455	455	455
17.	Did you clean tillage or harvesting implements after completing field work for the purpose of reducing the spread of weeds, diseases or other pests?	457	457	457	457	457
18.	Did you adjust planting or harvesting dates to control pests?	460	460	460	460	460
19.	Did you choose planting locations to avoid cross infestation of insects or disease?	464	464	464	464	464
20.	Did you rotate crops for the purpose of controlling pests?	462	462	462	462	462
21.	Did you use weather monitoring to predict the need for pesticide application?	480	480	480	480	480
22.	Did you alternate pesticides to keep pests from becoming resistant to pesticides (use pesticides with different mechanisms of action)?	461	461	461	461	461
23.	Did you adjust row spacing, plant density or row direction to control pests?	459	459	459	459	459
24.	Did you maintain ground covers, mulches or physical barriers to reduce pest problems?	454	454	454	454	454
25.	Did you grow a trap crop to help control insects?	465	465	465	465	465
26.	[Column completion code] 1- Incomplete 3- Valid Zero	401	402	403	404	405
		442	442	442	442	442

Report Features/Contracts

Released May 30, 2001, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, U.S. Department of Agriculture. For additional copies or information on "Pest Management Practices" call NASS Customer Service at (202) 720-6146, office hours 7:30 a.m. to 4:00 p.m. ET.

This is the fourth and final separate report of the series on Pest Management Practices. NASS will continue to publish pest management practices data in its commodity-specific "Agricultural Chemical Usage" report series.

Listed below are persons within the National Agricultural Statistics Service to contact for additional information:

Larry Beard, Environmental Statistician	(202) 690-1052
Norman W. Bennett, Head, Environmental and Demographics Section	(202) 720-0684
Linda J. Hutton, Chief, Economic, Environmental and Demographics Branch	(202) 720-5084

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, D.C., 20250-9410, or call 202-720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

ACCESS TO REPORTS!!

For your convenience, there are several ways to obtain NASS reports, data products, and services:

INTERNET ACCESS

All NASS reports are available free of charge on the worldwide Internet. For access, connect to the Internet and go to the NASS Home Page at: <http://www.usda.gov/nass/>. Select "Today's Reports" or Publications and then Reports by Calendar or Publications and then Search, by Title or Subject.

E-MAIL SUBSCRIPTION

There are two options for subscribing via e-mail. All NASS reports are available by subscription free of charge direct to your e-mail address. 1) Starting with the NASS Home Page at <http://www.usda.gov/nass/>, click on **Publications**, then click on the **Subscribe by E-mail** button which takes you to the page describing e-mail delivery of reports. Finally, click on **Go to the Subscription Page** and follow the instructions. 2) If you do NOT have Internet access, send an e-mail message to: usda-reports@usda.mannlib.cornell.edu. In the body of the message type the word: **list**.

AUTOFAX ACCESS

NASSFax service is available for some reports from your fax machine. Please call 202-720-2000, using the handset attached to your fax. Respond to the voice prompts. Document 0411 is a list of available reports.

PRINTED REPORTS OR DATA PRODUCTS

CALL OUR TOLL-FREE ORDER DESK: 800-999-6779 (U.S. and Canada)
Other areas, please call 703-834-0125 FAX: 703-834-0110
(Visa, MasterCard, check, or money order acceptable for payment.)

ASSISTANCE

For **assistance** with general agricultural statistics or further information about NASS or its products or services, contact the **Agricultural Statistics Hotline** at **800-727-9540**, 7:30 a.m. to 4:00 p.m. ET, or e-mail: nass@nass.usda.gov.