

## Appendix II—Tables on Pest Management Practices by Crop and Region<sup>1</sup>

**Appendix table 2.1—Corn: Scouting, source of scouting, and pest management practices, by region, 1996**

Item	Region <sup>2</sup>			
	Northeast	North Central	South	All corn States
	<i>Percent of planted acres</i>			
<b>Scouting for weeds</b>	80	78	73	78
Source of scouting:				
Operator, partner, family member	57	60	54	59
Employee	1	2	1	2
Chemical dealer	17	8	8	8
Consultant or commercial scout	4	8	10	8
<b>Scouting for insects</b>	60	67	58	66
Source of scouting:				
Operator/family member	43	50	41	49
Employee	1	2	1	2
Chemical dealer	12	7	9	2
Consultant or commercial scout	4	9	6	8
<b>Scouting for diseases</b>	33	52	50	51
<b>Scouted and kept written/electronic records to track the activity of:</b>				
Broadleaf weeds	12	20	11	19
Grass weeds	10	19	12	19
Insects	I	I	I	I
<b>Other monitoring</b>				
Used pheromone lures to monitor pests <sup>3</sup>	0	1	*	1
Used soil biological testing to detect pests such as insects, diseases or nematodes	*	2	4	2
<b>Biological techniques</b>				
Considered beneficial insects in selecting pesticides	10	8	12	8
Purchased and released beneficial insects	0	*	0	*
Used pheromone lures to control pests	na	na	na	na
Used <i>Bacillus thuringiensis</i> (Bt) <sup>4</sup>	1	2.5	2.3	2.4
<b>Cultural techniques</b>				
Adjusted planting or harvesting dates <sup>5</sup>	2	5	7	5
Used mechanical cultivation for weed control	6	52	43	51
Used a no-till system	29	19	13	19
Crop rotations <sup>6</sup> —				
Continuous <sup>7</sup>	36	18	17	18
Rotation with other row crops <sup>8</sup>	20	55	40	54
Other <sup>9</sup>	44	27	43	28
<b>Pesticide efficiency</b>				
Alternated pesticides to control pest resistance	26	31	33	31
Planted acres (1,000 acres)	1450	64000	4800	70250

<sup>1</sup> Durum wheat was excluded from this appendix because the results in the text tables were for a single State.

<sup>2</sup> Regions: Northeast— PA; North Central— IL, IN, IA, KS, MI, MN, MO, NE, OH, SD, WI; South— KY, NC, SC, TX.

<sup>3</sup> For corn, pheromone lures were used to monitor black cutworm. <sup>4</sup> Percent of insecticide-treated acres for Bt. <sup>5</sup> Adjust planting dates only for corn. <sup>6</sup> Crop rotations include three years 1994, 1995, and 1996. <sup>7</sup> The same crop was planted in 1994, 1995, and 1996.

<sup>8</sup> A crop sequence, excluding continuous same crop, where only row crops (corn, soybeans, sorghum, cotton, and peanuts) were planted for three consecutive years. <sup>9</sup> Other excludes continuous same crop and rotation with row crops and includes fallow or idle.

I See Appendix table 2.14 for corn insect pest management practices.

na= not available. \* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.2—Soybeans: Scouting, source of scouting, and pest management practices, by region, 1996**

Item	Region <sup>1</sup>		
	North Central	South	All soybean States
	<i>Percent of planted acres</i>		
<b>Scouting for weeds</b>	80	76	79
Source of scouting:			
Operator, partner, family member	68	67	68
Employee	1	3	1
Chemical dealer	7	1	6
Consultant or commercial scout	3	4	3
<b>Scouting for insects</b>	58	69	59
Source of scouting:			
Operator/family member	50	59	51
Employee	1	3	1
Chemical dealer	4	1	3
Consultant or commercial scout	3	6	3
<b>Scouting for diseases</b>	52	59	53
<b>Scouted and kept written/electronic records to track the activity of:</b>			
Broadleaf weeds	19	18	19
Grass weeds	19	18	19
Insects	12	18	13
<b>Other monitoring</b>			
Used pheromone lures to monitor pests	*	1	*
Used soil biological testing to detect pests such as insects, diseases or nematodes	3	2	3
<b>Biological techniques</b>			
Considered beneficial insects in selecting pesticides	3	15	5
Purchased and released beneficial insects	*	*	*
Used pheromone lures to control pests	*	1	*
Used <i>Bacillus thuringiensis</i> (Bt) <sup>2</sup>	0	2.2	1.6
<b>Cultural techniques</b>			
Adjusted planting or harvesting dates	6	8	6
Used mechanical cultivation for weed control	28	34	29
Used a no-till system	35	21	33
Crop rotations <sup>3</sup> —			
Continuous <sup>4</sup>	5	43	11
Rotation with other row crops <sup>5</sup>	72	15	63
Other <sup>6</sup>	23	42	26
<b>Pesticide efficiency</b>			
Alternated pesticides to control pest resistance	30	20	28
Planted acres (1,000 acres)	42320	7650	50970

<sup>1</sup> Regions: North Central— IL, IN, IA, MN, MO, NE, OH, WI; South— AR, LA, MS, TN. <sup>2</sup> Percent of insecticide-treated acres for Bt. <sup>3</sup> Crop rotations include three years 1994, 1995, and 1996. <sup>4</sup> The same crop was planted in 1994, 1995, and 1996. <sup>5</sup> A crop sequence, excluding continuous same crop, where only row crops (corn, soybeans, sorghum, cotton, and peanuts) were planted for three consecutive years. <sup>6</sup> Other excludes continuous same crop and rotation with row crops and includes fallow or idle.

na= not available. \* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.3—Cotton: Scouting, source of scouting, and pest management practices, by region, 1996**

Item	Region <sup>1</sup>		
	South	West	All cotton States
	<i>Percent of planted acres</i>		
<b>Scouting for weeds</b>	70	94	72
Source of scouting:			
Operator, partner, family member	48	32	46
Employee	1	14	3
Chemical dealer	1	26	4
Consultant or commercial scout	19	21	19
<b>Scouting for insects</b>	86	99	88
Source of scouting:			
Operator/family member	24	19	24
Employee	2	14	3
Chemical dealer	7	34	10
Consultant or commercial scout	54	32	51
<b>Scouting for diseases</b>	49	86	53
<b>Scouted and kept written/electronic records to track the activity of:</b>			
Broadleaf weeds	26	47	28
Grass weeds	26	47	28
Insects	49	73	52
<b>Other monitoring</b>			
Used pheromone lures to monitor pests	36	17	33
Used soil biological testing to detect pests such as insects, diseases, or nematodes	9	7	9
<b>Biological techniques</b>			
Considered beneficial insects in selecting pesticides	50	71	52
Purchased and released beneficial insects	*	1	*
Used pheromone lures to control pests	7	9	7
Used <i>Bacillus thuringiensis</i> (Bt) <sup>2</sup>	4.7	4	4.1
<b>Cultural techniques</b>			
Adjusted planting or harvesting dates	26	19	25
Used mechanical cultivation for weed control	88	98	89
Used a no-till system	na	na	na
Crop rotations <sup>3</sup> —			
Continuous <sup>4</sup>	69	44	67
Rotation with other row crops <sup>5</sup>	17	3	15
Other <sup>6</sup>	14	53	18
<b>Pesticide efficiency</b>			
Alternated pesticides to control pest resistance	37	70	41
Planted acres (1,000 acres)	10600	1315	11915

<sup>1</sup> Regions: South— AR, GA, LA, MS, TN, TX; West— AZ, CA. <sup>2</sup> Percent of insecticide-treated acres for Bt.

<sup>3</sup> Crop rotations include three years 1994, 1995, and 1996. <sup>4</sup> The same crop was planted in 1994, 1995, and 1996.

<sup>5</sup> A crop sequence, excluding continuous same crop, where only row crops (corn, soybeans, sorghum, cotton, and peanuts) were planted for three consecutive years.

<sup>6</sup> Other excludes continuous same crop and rotation with row crops and includes fallow or idle.

na= not available. \* Less than 0.5 percent. Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.4—Fall potatoes: Scouting, source of scouting, and pest management practices, by region, 1996**

Item	Region <sup>1</sup>			
	North-east	North Central	West	All fall potato States
	<i>Percent of planted acres</i>			
<b>Scouting for weeds</b>	100	88	95	94
Source of scouting:				
Operator, partner, family member	100	43	57	59
Employee	0	9	7	7
Chemical dealer	0	17	20	17
Consultant or commercial scout	0	20	12	12
<b>Scouting for insects</b>	100	97	98	98
Source of scouting:				
Operator/family member	100	50	52	56
Employee	*	9	8	7
Chemical dealer	0	17	23	19
Consultant or commercial scout	0	21	16	15
<b>Scouting for diseases</b>	41	97	97	91
<b>Scouted and kept written/electronic records to track the activity of:</b>				
Broadleaf weeds	68	19	23	26
Grass weeds	68	22	22	26
Insects	69	22	29	31
<b>Other monitoring</b>				
Used pheromone lures to monitor pests	4	*	3	3
Used soil biological testing to detect pests such as insects, diseases, or nematodes	2	4	62	46
<b>Biological techniques</b>				
Considered beneficial insects in selecting pesticides	6	23	34	29
Purchased and released beneficial insects	0	0	0	0
Used pheromone lures to control pests	2	0	2	2
Used <i>Bacillus thuringiensis</i> (Bt) <sup>2</sup>	*	0	*	*
<b>Cultural techniques</b>				
Adjusted planting or harvesting dates	*	3	9	7
Used mechanical cultivation for weed control	90	99	82	86
Used a no-till system	na	na	na	na
Crop rotations <sup>3</sup> —				
Continuous <sup>4</sup>	8	0	1	2
Rotation with other row crops <sup>5</sup>	3	1	2	2
Other <sup>6</sup>	89	99	97	96
<b>Pesticide efficiency</b>				
Alternated pesticides to control pest resistance	72	61	71	69
Planted acres (1,000 acres)	78	146	573	787

<sup>1</sup> Regions: Northeast— ME; North Central— Red River Valley, part of MN and ND; West— ID, WA

<sup>2</sup> Percent of insecticide-treated acres for Bt. <sup>3</sup> Crop rotations include three years 1994, 1995, and 1996.

<sup>4</sup> The same crop was planted in 1994, 1995, and 1996. <sup>5</sup> A crop sequence, excluding continuous same crop, where only row crops (corn, soybeans, sorghum, cotton, and peanuts) were planted for three consecutive years.

<sup>6</sup> Other excludes continuous same crop and rotation with row crops and includes fallow or idle.

na= not available. \* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.5—Winter wheat: Scouting, source of scouting, and pest management practices, by region, 1996**

Item	Region <sup>1</sup>				
	North-east	North Central	South	West	All winter wheat States
	Percent of planted acres				
<b>Scouting for weeds</b>	86	75	89	95	85
Source of scouting:					
Operator, partner, family member	67	68	74	78	73
Employee	0	0	0	2	*
Chemical dealer	14	2	2	15	6
Consultant or commercial scout	5	4	12	1	5
<b>Scouting for insects</b>	97	62	85	80	74
Source of scouting:					
Operator/family member	74	57	68	64	62
Employee	0	0	*	1	*
Chemical dealer	18	1	3	14	5
Consultant or commercial scout	5	5	13	1	6
<b>Scouting for diseases</b>	83	62	66	71	66
<b>Scouted and kept written/electronic records to track the activity of:</b>					
Broadleaf weeds	10	17	22	14	17
Grass weeds	10	12	21	12	15
Insects	12	13	21	11	14
<b>Other monitoring</b>					
Used pheromone lures to monitor pests	*	0	0	*	*
Used soil biological testing to detect pests such as insects, diseases, or nematodes	2	0	1	5	2
<b>Biological techniques</b>					
Considered beneficial insects in selecting pesticides	6	10	9	12	10
Purchased and released beneficial insects	0	0	0	*	*
Used pheromone lures to control pests	*	0	0	*	*
Used <i>Bacillus thuringiensis</i> (Bt) <sup>2</sup>	0	0	0	1	*
<b>Cultural techniques</b>					
Adjusted planting or harvesting dates	8	22	6	25	19
Used mechanical cultivation for weed control	na	na	na	na	na
Used a no-till system	2	4	1	4	3
Crop rotations <sup>3</sup> —					
Continuous <sup>4</sup>	0	46	69	11	42
Rotation with other row crops <sup>5</sup>	9	2	3	*	2
Other <sup>6</sup>	91	52	28	89	56
<b>Pesticide efficiency</b>					
Alternated pesticides to control pest resistance	38	7	4	31	13
Planted acres (1,000 acres)	78	12480	7800	8240	28598

<sup>1</sup> Regions: Northeast— DE; North Central— KS, NE, SD; South— OK, TX; West— CO, ID, MT, OR, WA.

<sup>2</sup> Percent of insecticide-treated acres for Bt. <sup>3</sup> Crop rotations include three years 1994, 1995, and 1996.

<sup>4</sup> The same crop was planted in 1994, 1995, and 1996. <sup>5</sup> A crop sequence, excluding continuous same crop, where only row crops (corn, soybeans, sorghum, cotton, and peanuts) were planted for three consecutive years.

<sup>6</sup> Other excludes continuous same crop and rotation with row crops and includes fallow or idle.

na= not available. \* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.6—Spring wheat: Scouting, source of scouting, and pest management practices, by region, 1996**

Item	Region <sup>1</sup>		
	North Central	West	All spring wheat States
	<i>Percent of planted acres</i>		
<b>Scouting for weeds</b>	87	98	90
Source of scouting:			
Operator, partner, family member	77	78	77
Employee	*	*	*
Chemical dealer	5	20	9
Consultant or commercial scout	6	0	4
<b>Scouting for insects</b>	63	67	64
Source of scouting:			
Operator/family member	52	67	56
Employee	*	*	*
Chemical dealer	5	0	3
Consultant or commercial scout	6	0	4
<b>Scouting for diseases</b>	59	65	60
<b>Scouted and kept written/electronic records to track the activity of:</b>			
Broadleaf weeds	18	37	23
Grass weeds	18	14	17
Insects	11	5	9
<b>Other monitoring</b>			
Used pheromone lures to monitor pests	5	0	4
Used soil biological testing to detect pests such as insects, diseases, or nematodes	0	0	0
<b>Biological techniques</b>			
Considered beneficial insects in selecting pesticides	4	3	4
Purchased and released beneficial insects	1	0	*
Used pheromone lures to control pests	2	0	1
Used <i>Bacillus thuringiensis</i> (Bt) <sup>2</sup>	0	0	0
<b>Cultural techniques</b>			
Adjusted planting or harvesting dates	9	19	11
Used mechanical cultivation for weed control	na	na	na
Used a no-till system	2	8	4
Crop rotations <sup>3</sup> —			
Continuous <sup>4</sup>	15	11	14
Rotation with other row crops <sup>5</sup>	3	0	2
Other <sup>6</sup>	82	89	83
<b>Pesticide efficiency</b>			
Alternated pesticides to control pest resistance	44	22	38
Planted acres (1,000 acres)	12150	4200	16350

<sup>1</sup> Regions: North Central— MN, ND; West— MT. <sup>2</sup> Percent of insecticide-treated acres for Bt.

<sup>3</sup> Crop rotations include three years 1994, 1995, and 1996. <sup>4</sup> The same crop was planted in 1994, 1995, and 1996.

<sup>5</sup> A crop sequence, excluding continuous same crop, where only row crops (corn, soybeans, sorghum, cotton, and peanuts) were planted for three consecutive years.

<sup>6</sup> Other excludes continuous same crop and rotation with row crops and includes fallow or idle.

na= not available. \* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.7—Corn: Herbicide application timing, application decision criteria, and application methods, by region, 1996**

Item	Region <sup>1</sup>			
	North-east	North Central	South	All corn States
<i>Percent of herbicide-treated acres</i>				
<b>Preemergence only</b>				
Area treated	43	37	55	39
Application decision criteria:				
Previous problem/routine	86	93	94	93
Field mapping	11	12	8	12
Computer decision model	0	1	0	1
Crop consultant recommendation	26	19	14	19
<b>Postemergence only</b>				
Area treated	20	20	13	20
Application decision criteria:				
Routine treatment	55	63	72	63
Type and density of weeds	28	53	19	52
Computer decision model	0	*	0	*
Crop consultant recommendation	31	24	36	24
<b>Pre- and postemergence</b>				
Area treated	37	42	30	41
Application decision criteria:				
Previous problem/routine	96	93	96	94
Field mapping	3	15	3	14
Routine treatment	93	63	79	64
Type and density of weeds	83	71	53	71
Computer decision model	0	1	0	1
Crop consultant recommendation	17	21	9	20
<b>Application methods:</b>				
Broadcast <sup>2</sup>	83	85	82	85
In seed furrow <sup>3</sup>	0	1	1	1
In irrigation water	0	*	0	*
Banded <sup>4</sup>	2	9	9	9
Foliar or directed spray	15	5	8	6

<sup>1</sup> Regions: Northeast— PA; North Central— IL, IN, IA, KS, MI, MN, MO, NE, OH, SD, WI; South— KY, NC, SC, TX.

<sup>2</sup> Broadcast includes ground with and without incorporation and aerial broadcast.

<sup>3</sup> Includes in seed furrow and chisel/injected or knifed in.

<sup>4</sup> Banded in or over row.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.8—Soybeans: Herbicide application timing, application decision criteria, and application methods, by region, 1996**

Item	Region <sup>1</sup>		
	North Central	South	All soybean States
<i>Percent of herbicide-treated acres</i>			
<b><i>Preemergence only</i></b>			
Area treated	16	20	17
Application decision criteria:			
Previous problem/routine	89	96	90
Field mapping	11	3	10
Computer decision model	*	0	*
Crop consultant recommendation	17	4	15
<b><i>Postemergence only</i></b>			
Area treated	30	20	29
Application decision criteria:			
Routine treatment	68	44	65
Type and density of weeds	63	76	64
Computer decision model	1	0	1
Crop consultant recommendation	15	4	14
<b><i>Pre- and postemergence</i></b>			
Area treated	52	57	54
Application decision criteria:			
Previous problem/routine	93	92	93
Field mapping	12	7	11
Routine treatment	66	47	63
Type and density of weeds	74	65	73
Computer decision model	1	1	1
Crop consultant recommendation	25	11	23
<b><i>Application methods:</i></b>			
Broadcast <sup>2</sup>	89	83	88
In seed furrow <sup>3</sup>	*	*	*
In irrigation water	0	0	0
Banded <sup>4</sup>	3	12	5
Foliar or directed spray	8	4	7

<sup>1</sup> Regions: North Central— IL, IN, IA, MN, MO, NE, OH, WI; South— AR, LA, MS, TN.

<sup>2</sup> Broadcast includes ground with and without incorporation and aerial broadcast.

<sup>3</sup> Includes in seed furrow and chisel/injected or knifed in.

<sup>4</sup> Banded in or over row.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.9—Cotton: Herbicide application timing, application decision criteria, and application methods, by region, 1996**

Item	Region <sup>1</sup>		
	South	West	All cotton States
<i>Percent of herbicide-treated acres</i>			
<b>Preemergence only</b>			
Area treated	31	48	33
Application decision criteria:			
Previous problem/routine	97	91	96
Field mapping	3	15	5
Computer decision model	*	*	*
Crop consultant recommendation	9	10	9
<b>Postemergence only</b>			
Area treated	3	1	4
Application decision criteria:			
Routine treatment	23	74	25
Type and density of weeds	80	82	80
Computer decision model	0	0	0
Crop consultant recommendation	6	0	6
<b>Pre- and postemergence</b>			
Area treated	64	48	63
Application decision criteria:			
Previous problem/routine	92	98	92
Field mapping	14	29	15
Routine treatment	60	53	60
Type and density of weeds	65	78	66
Computer decision model	*	1	*
Crop consultant recommendation	21	13	21
<b>Application methods:</b>			
Broadcast <sup>2</sup>	43	71	45
In seed furrow <sup>3</sup>	2	4	2
In irrigation water	*	*	*
Banded <sup>4</sup>	40	9	38
Foliar or directed spray	15	16	15

<sup>1</sup> Regions: South— AR, GA, LA, MS, TN, TX; West— AZ, CA.

<sup>2</sup> Broadcast includes ground with and without incorporation and aerial broadcast.

<sup>3</sup> Includes in seed furrow and chisel/injected or knifed in.

<sup>4</sup> Banded in or over row.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.10—Fall potatoes: Herbicide application timing, application decision criteria, and application methods, by region, 1996**

Item	Region <sup>1</sup>			
	North-east	North Central	West	All fall potato States
<i>Percent of herbicide-treated acres</i>				
<b>Preemergence only</b>				
Area treated	12	23	42	37
Application decision criteria:				
Previous problem/routine	100	100	94	96
Field mapping	7	0	16	14
Computer decision model	0	0	1	1
Crop consultant recommendation	19	0	29	26
<b>Postemergence only</b>				
Area treated	65	59	20	31
Application decision criteria:				
Routine treatment	97	60	79	79
Type and density of weeds	6	55	56	43
Computer decision model	0	1	0	*
Crop consultant recommendation	*	79	37	37
<b>Pre- and postemergence</b>				
Area treated	19	5	37	32
Application decision criteria:				
Previous problem/routine	82	83	96	96
Field mapping	8	0	7	7
Routine treatment	85	34	83	82
Type and density of weeds	15	79	90	85
Computer decision model	0	0	2	1
Crop consultant recommendation	0	55	20	19
<b>Application methods:</b>				
Broadcast <sup>2</sup>	3	98	43	46
In seed furrow <sup>3</sup>	2	0	24	20
In irrigation water	0	0	28	23
Banded <sup>4</sup>	0	1	*	*
Foliar or directed spray	94	1	4	11

<sup>1</sup> Regions: Northeast— ME; North Central— Red River Valley, part of MN and ND; West— ID, WA

<sup>2</sup> Broadcast includes ground with and without incorporation and aerial broadcast.

<sup>3</sup> Includes in seed furrow and chisel/injected or knifed in.

<sup>4</sup> Banded in or over row.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.11—Winter wheat: Herbicide application timing, application decision criteria, and application methods, by region, 1996**

Item	Region <sup>1</sup>				
	North-east	North Central	South	West	All winter wheat States
<i>Percent of herbicide-treated acres</i>					
<b>Preemergence only</b>					
Area treated	22	12	17	3	9
Application decision criteria:					
Previous problem/routine	100	99	94	100	98
Field mapping	23	26	60	20	35
Computer decision model	0	0	0	0	0
Crop consultant recommendation	23	12	6	43	15
<b>Postemergence only</b>					
Area treated	51	73	76	88	80
Application decision criteria:					
Routine treatment	58	22	100	47	33
Type and density of weeds	37	87	44	81	77
Computer decision model	0	0	0	*	*
Crop consultant recommendation	5	19	45	15	21
<b>Pre- and postemergence</b>					
Area treated	9	13	4	9	11
Application decision criteria:					
Previous problem/routine	100	80	31	66	71
Field mapping	0	63	0	6	35
Routine treatment	100	87	45	54	71
Type and density of weeds	0	20	47	57	37
Computer decision model	0	0	0	0	0
Crop consultant recommendation	0	13	0	7	9
<b>Application methods:</b>					
Broadcast <sup>2</sup>	72	86	75	88	86
In seed furrow <sup>3</sup>	0	0	0	*	*
In irrigation water	0	0	0	*	*
Banded <sup>4</sup>	0	2	0	0	1
Foliar or directed spray	28	12	25	11	13

<sup>1</sup> Regions: Northeast— DE; North Central— KS, NE, SD; South— OK, TX; West— CO, ID, MT, OR, WA.

<sup>2</sup> Broadcast includes ground with and without incorporation and aerial broadcast.

<sup>3</sup> Includes in seed furrow and chisel/injected or knifed in.

<sup>4</sup> Banded in or over row.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.12—Spring wheat: Herbicide application timing, application decision criteria, and application methods, by region, 1996**

Item	Region <sup>1</sup>		
	North Central	West	All spring wheat States
<i>Percent of herbicide-treated acres</i>			
<b>Preemergence only</b>			
Area treated	*	2	1
Application decision criteria:			
Previous problem/routine	100	100	100
Field mapping	0	71	69
Computer decision model	0	0	0
Crop consultant recommendation	0	23	22
<b>Postemergence only</b>			
Area treated	78	75	78
Application decision criteria:			
Routine treatment	53	69	56
Type and density of weeds	65	54	63
Computer decision model	0	0	0
Crop consultant recommendation	14	7	12
<b>Pre- and postemergence</b>			
Area treated	20	23	21
Application decision criteria:			
Previous problem/routine	88	93	89
Field mapping	7	0	6
Routine treatment	50	52	53
Type and density of weeds	60	59	60
Computer decision model	0	0	0
Crop consultant recommendation	22	0	16
<b>Application methods:</b>			
Broadcast <sup>2</sup>	80	100	84
In seed furrow <sup>3</sup>	2	0	2
In irrigation water	0	0	0
Banded <sup>4</sup>	0	0	0
Foliar or directed spray	17	0	14

<sup>1</sup> Regions: North Central— MN, ND; West— MT.

<sup>2</sup> Broadcast includes ground with and without incorporation and aerial broadcast.

<sup>3</sup> Includes in seed furrow and chisel/injected or knifed in.

<sup>4</sup> Banded in or over row.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.13—Pest-resistant varieties used by field crop and region, 1996**

Item	Region <sup>1</sup>				
	North-east	North Central	South	West	All States
<i>Percent of planted acres</i>					
<b>Corn</b>					
Herbicide-resistant hybrid/variety	id	2	11		3
Bt variety for insect resistance	1	1	1		1
Gray-leaf-spot-resistant variety	20	2	2		2
Planted acres (1,000 acres)	1450	64000	4800		70250
Number of observations	93	3589	259		3941
<b>Soybeans</b>					
Herbicide-resistant hybrid/variety		7	10		7
Planted acres (1,000 acres)		43320	7650		50970
Number of observations		2259	590		2849
<b>Cotton</b>					
Herbicide-resistant hybrid/variety			id	id	id
Bt variety for insect resistance			15	7	15
Planted acres (1,000 acres)			10600	1315	11915
Number of observations			936	213	1149
<b>Fall Potatoes</b>					
Bt variety for insect resistance	7	0		1	1
Potato-scab-resistant variety	1	1		1	1
Planted acres (1,000 acres)	78	146		573	787

<sup>1</sup> Regions: Northeast— DE, ME, PA; North Central— IL, IN, IA, KS, MI, MN, MO, ND, NE, OH, SD, WI; South— AR, GA, LA, MS, KY, NC, SC, OK, TN, TX; West— AZ, CA, CO, ID, MT, OR, WA.

id= insufficient data for a statistically reliable estimate.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.14—Monitoring and other pest management practices for corn by region, 1996**

Item	Region <sup>1</sup>			
	North-east	North Central	South	All corn States
<i>Percent of planted acres</i>				
<b>Monitoring</b>				
Used soil biological testing to detect insects, diseases, or nematodes	*	2	4	2
Scouted and kept written/electronic records on black cutworms	5	12	10	11
Scouted and kept written/electronic records on corn rootworms	9	15	10	14
Scouted and kept written/electronic records on European corn borers	7	19	8	18
Scouted and kept written/electronic records on spider mites	1	8	6	8
Scouted for adult corn rootworm beetles during 1995 season	11	14	16	14
Scouted for adult corn rootworm beetles during 1996 season	8	7	4	7
Used pheromone lures to monitor black cutworm	0	1	1	1
Used pre-plant grain traps to monitor wireworms	0	*	1	*
Submitted diseased plants to a lab for diagnosis	*	2	2	1
<b>Other practices</b>				
Considered beneficial insects in selecting and using pesticides	10	8	12	8
Removed weeds to prevent insect egg laying	22	9	11	10
Used seed treatments for seedling blight	19	11	25	12
Routinely used soil insecticide at planting to control corn rootworm	52	23	30	24
<b>Weed resistance</b>				
Weeds resistant to the triazine family of herbicides	40	10	16	11
Weeds resistant to ALS (sulphonylurea or imidazolinone families)	1	5	2	4
<i>Percent of insecticide-treated acres</i>				
<b>Biological practices</b>				
Purchased and released beneficial insects	0	*	0	*
Used <i>Bacillus thuringiensis</i> (Bt)	0	2.5	2.3	2.4
Planted acres (1,000 acres)	1,450	6,4000	4,800	7,0250

<sup>1</sup> Regions: Northeast— PA; North Central— IL, IN, IA, KS, MI, MN, MO, NE, OH, SD, WI; South— KY, NC, SC, TX.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.15—Primary source of pest management information for corn growers by region, 1996**

Item	Region <sup>1</sup>			
	North-east	North Central	South	All corn States
<i>Percent of planted acres</i>				
Extension advisors, and commercial scouting service, and crop consultants	40	22	22	21
Farm supply/chemical dealer	52	70	63	69
Other growers and producer associations, newsletters, or trade magazines	5	3	9	5
Media or other information sources (World Wide Web, DTN, etc.)	*	2	1	2
None	2	3	5	3
Planted acres (1,000 acres)	1450	64000	4800	70250

<sup>1</sup> Regions: Northeast— PA; North Central— IL, IN, IA, KS, MI, MN, MO, NE, OH, SD, WI; South— KY, NC, SC, TX.

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.16—Soybean: Insecticide decision criteria and primary source of pest management information, by region, 1996**

Item	Region <sup>1</sup>		
	North Central	South	All soybean States
<i>Percent of planted acres</i>			
Compared scouted data to university or Extension guidelines for infestation thresholds	10	15	11
Used standard practice or history of insect problems	32	20	30
Used local information (other farmers, radio TV, etc.) that the pest was or was not present	13	6	12
Used the operator's own determination of the pest infestation level	54	56	54
<b><i>Pest management information sources:</i></b>			
Extension advisors, and commercial scouting service, and crop consultants	12	28	14
Farm supply/chemical dealer	79	44	74
Other growers and producer associations, newsletters or trade magazines	3	2	3
Media or other information sources (World Wide Web, DTN, etc.)	2	7	3
None	4	19	6
Planted acres (1,000 acres)	42,320	7,650	50,970

<sup>1</sup> Regions: North Central— IL, IN, IA, MN, MO, NE, OH, WI; South— AR, LA, MS, TN.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.17—Cotton: Insecticide decision criteria and primary source of pest management information, by region, 1996**

Item	Region <sup>1</sup>		
	South	West	All cotton States
	<i>Percent of planted acres</i>		
Compared scouted data to university or Extension guidelines for infestation thresholds	43	59	46
Used standard practice or history of insect problems	19	45	22
Used local information (other farmers, radio TV, etc.) that the pest was or was not present	6	15	7
Used the operator's own determination of the pest infestation level	56	44	55
<b><i>Pest management information sources:</i></b>			
Extension advisors, and commercial scouting service, and crop consultants	63	52	62
Farm supply/chemical dealer	20	40	22
Other growers and producer associations, newsletters or trade magazines	5	1	5
Media or other information sources (World Wide Web, DTN, etc.)	4	5	4
None	8	2	7
Planted acres (1,000 acres)	10,600	1,315	11,915

<sup>1</sup> Regions: South— AR, GA, LA, MS, TN, TX; West— AZ, CA.  
Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.18—Fall potatoes: Insecticide decision criteria and primary source of pest management information, by region, 1996**

Item	Region <sup>1</sup>			
	North-east	North Central	West	All fall potato States
	<i>Percent of planted acres</i>			
Compared scouted data to university or Extension guidelines for infestation thresholds	15	39	22	24
Used standard practice or history of insect problems	6	62	60	55
Used local information (other farmers, radio TV, etc.) that the pest was or was not present	3	29	19	20
Used the operator's own determination of the pest infestation level	87	82	83	83
<b><i>Pest management information sources:</i></b>				
Extension advisors, and commercial scouting service, and crop consultants	31	49	40	40
Farm supply/chemical dealer	67	35	57	54
Other growers and producer associations, newsletters or trade magazines	0	13	2	4
Media or other information sources (World Wide Web, DTN, etc.)	1	2	*	1
None	1	*	1	1
Planted acres (1,000 acres)	78	146	573	787

<sup>1</sup> Regions: Northeast— ME; North Central— Red River Valley, part of MN and ND; West— ID, WA

\* Less than 0.5 percent.

Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.19—Winter wheat: Insecticide decision criteria and primary source of pest management information, by region, 1996**

Item	Region <sup>1</sup>				
	North-east	North Central	South	West	All winter wheat States
	<i>Percent of planted acres</i>				
Compared scouted data to university or Extension guidelines for infestation thresholds	14	14	6	15	12
Used standard practice or history of insect problems	7	24	8	26	20
Used local information (other farmers, radio TV, etc.) that the pest was or was not present	4	10	4	14	9
Used the operator's own determination of the pest infestation level	70	63	83	65	69
<b><i>Pest management information sources:</i></b>					
Extension advisors, and commercial scouting service, and crop consultants	19	27	20	20	24
Farm supply/chemical dealer	49	41	28	57	42
Other growers and producer associations- newsletters or trade magazines	2	12	26	6	13
Media or other information sources (World Wide Web, DTN, etc.)	1	5	6	3	5
None	29	15	20	14	16
Planted acres (1,000 acres)	78	12,480	7,800	8,240	28,598

<sup>1</sup> Regions: Northeast— DE; North Central— KS, NE, SD; South— OK, TX; West— CO, ID, MT, OR, WA.  
Source: NASS/ERS 1996 ARMS survey.

**Appendix table 2.20—Spring wheat: Insecticide decision criteria and primary source of pest management information, by region, 1996**

Item	Region <sup>1</sup>		
	North Central	West	All spring wheat States
	<i>Percent of planted acres</i>		
Compared scouted data to university or Extension guidelines for infestation thresholds	17	38	23
Used standard practice or history of insect problems	29	27	29
Used local information (other farmers, radio TV, etc.) that the pest was or was not present	11	9	11
Used the operator's own determination of the pest infestation level	63	71	65
<b><i>Pest management information sources:</i></b>			
Extension advisors, and commercial scouting service, and crop consultants	22	20	21
Farm supply/chemical dealer	52	55	52
Other growers and producer associations-newsletters or trade magazines	7	5	7
Media or other information sources (World Wide Web, DTN, etc.)	9	0	7
None	10	20	13
Planted acres (1,000 acres)	12,150	4,200	16,350

<sup>1</sup> Regions: North Central—MN, ND; West—MT.  
Source: NASS/ERS 1996 ARMS survey.