United States
Department of
Agriculture

National
Agricultural
Statistics
Service

Economics
Research
Service

Ag Ch 1(98)

Agricultural Chemical Usage
1997 Field Crops Summary

May 1998

1997 Agricultural Chemical Use Estimates for Field Crops

Overview: The agricultural chemical use estimates in this report are based on data compiled from the Agricultural Resources Management Study conducted during the Fall of 1997. All results refer to on-farm use of fertilizers and pesticides on the targeted crops for the 1997 crop year. Targeted crops include corn, upland cotton, fall potatoes, soybeans, and winter, durum, and other spring wheat. Data were collected late in the growing season or after the farm operator has indicated that planned applications were completed.

The table below shows survey coverage for 1996 and 1997 by crop. In the table are statistics on the number of States surveyed, the number of reports summarized, and the percent of the U. S. Crop acres accounted for in the surveyed States.

Agricultural Chemical Use Survey Coverage, 1996 and 1997

Crop	1996 States Surveyed	1996 Reports Summarized	1996 US Acreage Included	1997 States Surveyed	1997 Reports Summarized	1997 US Acreage Included
	--- Number ---		Percent	--- Number ---		Percent
Corn	16	3,921	88	10	1,688	77
Cotton, Upland	7	1,136	83	12	1,137	96
Potatoes, Fall	5	470	63	7	633	79
Soybeans	12	2,839	79	19	2,530	93
Wheat, Winter	10	825	72	14	1,427	84
Wheat, Durum	1	98	83	1	118	83
Wheat, Oth. Spr.	3	248	82	4	298	93

Highlights

Corn producers in the surveyed States applied nitrogen fertilizer to 99 percent of the acreage planted while phosphate and potash were put on 84 and 72 percent of the acreage. Herbicides were applied to 96 percent of the crop acres and insecticides were used on 30 percent of the acreage. Atrazine was the most common herbicide with 69 percent of the reported acreage being treated.

Cotton growers in the 12 major producing States surveyed applied nitrogen to 90 percent of the 1997 acreage planted. Phosphate went on 67 percent of the upland cotton while 58 percent of the major States acreage received potash. Pesticide usage was widespread in the twelve States. Herbicides were used on 97 percent of the cotton and insecticides on 77 percent. Also, 73 percent of the acreage was treated with other chemicals.

The 1997 fall potato crop, in seven major States received at least one application of nitrogen and phosphate fertilizers on nearly all the acreage. Potash was applied to 91 percent of the fall crop. Herbicides were used on 83 percent of the acreage while insecticides were applied to 92 percent. Fungicides went on 98 percent of the acres. Other chemicals used varied widely with diquat being the most commonly used active ingredient of that class.

Soybean growers in the nineteen States surveyed used nitrogen fertilizer on 20 percent of the acreage, phosphate on 28 percent and potash on 33 percent of the acreage planted. Herbicides were applied to 97 percent of the acreage. Insecticide and fungicide usage was minimal in the surveyed States.

Winter wheat producers applied nitrogen fertilizer to 84 percent of the winter wheat harvested acres in the fourteen surveyed States. Of the harvested area, 53 percent received phosphate fertilizer and potash was used on 15 percent of the fourteen State area. All surveyed States treated at least a portion of the harvested area with herbicides with 2,4-D again the most widely used in area applied and quantity. For Ohio, there were not enough reports of any one chemical used to publish pesticide data by chemical.

Most of the planted acres of North Dakota’s durum and the collective 4-state other spring wheat plantings had primary fertilizer percent coverages similar to that of 1996. The three most popular herbicides, in terms of area covered for spring wheat other than durum were 2,4-D, MCPA, and dicamba.

Corn

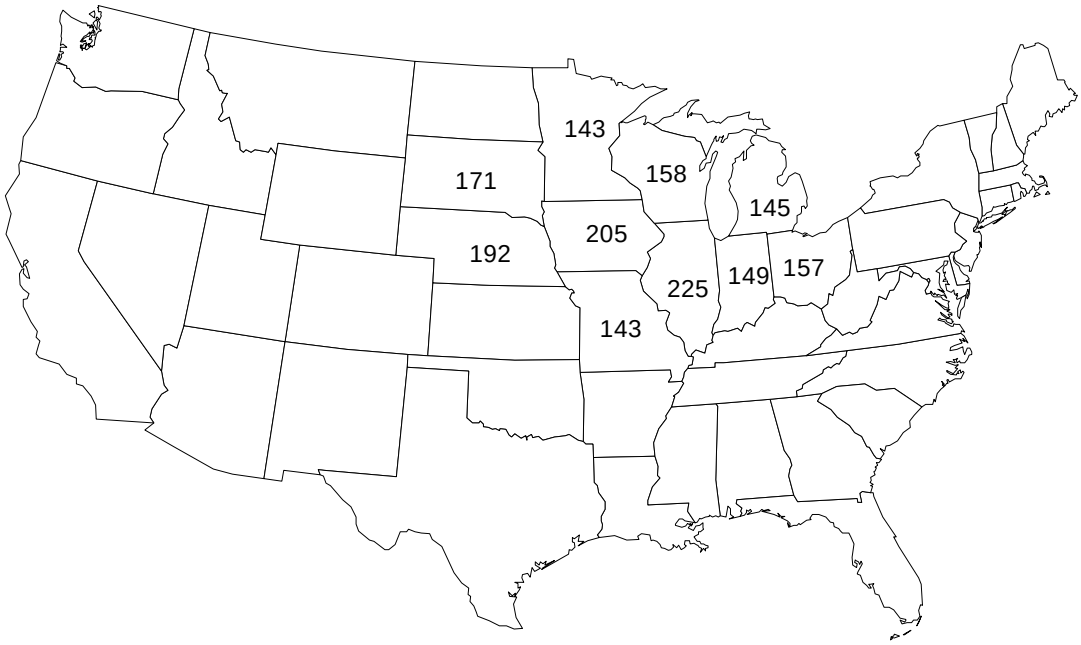
Nitrogen was applied to 99 percent of the total 1997 corn acreage in the ten States surveyed. South Dakota with 96 percent of the corn acreage treated was the lowest. The next lowest was Minnesota, where growers treated 97 percent of the planted corn acreage. Growers in Indiana, Michigan, Missouri and Nebraska reported 100 percent of the acreage treated. Growers used an average of 1.7 applications per acre applying 76 pounds per treatment. In the States surveyed, 84 percent of the planted corn acreage received phosphates, and potash was applied to 72 percent of the acreage.

Herbicides were applied to 96 percent of the corn acreage in 1997. Atrazine was the most used herbicide with 69 percent of the reported acreage being treated. Atrazine was applied at the rate of 1.01 pound per acre. Dicamba and Metolachlor were the next two most widely used herbicides and they were applied to 29 and 35 percent of the reported acreage, respectively.

In 1997, 30 percent of the corn acreage was treated with insecticides. Chlorpyrifos and Tefluthrin were the most widely used insecticides, with 7 percent of the reported acreage treated. Chlorpyrifos was applied at the rate of 1.12 pounds per acre and Tefluthrin was applied at .12 pounds per acre.

The following U.S. map shows the number of usable reports by State in the 1997 survey. These 10 States accounted for 62.2 million acres, 77 percent of the total corn acreage in 1997. The accompanying bar chart shows the 5 most commonly applied active ingredients in 1997 with comparisons for the previous two years.

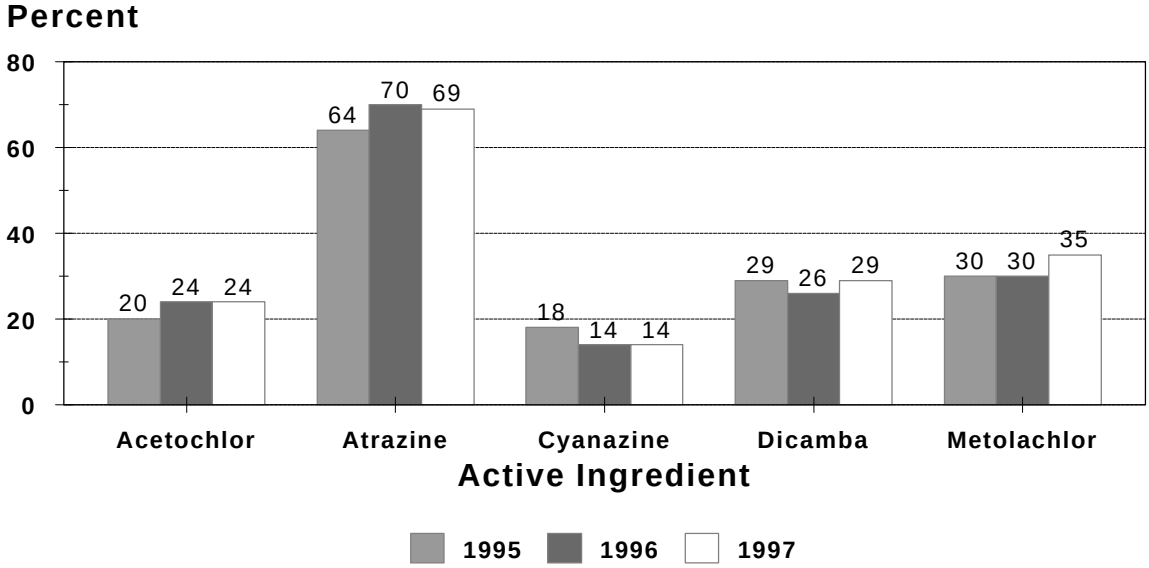
Corn: Number of Usable Reports, 1997



Corn - Percent of Acres Treated

Top 5 Active Ingredients for 1997

Comparison to 10 Comparable States



Comparable states are IL, IN, IA, MI, MN, MO, NE, OH, SD and WI

Corn: Fertilizer Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied					
		Nitrogen		Phosphate		Potash	
	1,000 Acres	Percent	Mil. Lbs	Percent	Mil. Lbs	Percent	Mil. Lbs
IL	11,200	99	1,689.5	87	747.9	87	1,046.8
IN	6,000	100	876.7	96	410.9	82	525.9
IA	12,200	99	1,464.3	75	575.4	75	668.0
MI	2,600	100	309.2	91	117.9	94	263.8
MN	7,000	97	750.9	79	270.4	81	309.6
MO	2,950	100	447.1	84	131.3	84	176.4
NE	9,000	100	1,313.1	80	205.2	26	33.3
OH	3,600	99	567.5	89	234.6	89	313.6
SD	3,800	96	303.1	80	113.9	31	25.5
WI	3,800	98	285.2	97	154.0	93	244.1
Total	62,150	99	8,006.6	84	2,961.5	72	3,607.0

Corn: Fertilizer Primary Nutrient Applications,
States Surveyed and Total, 1997

Primary Nutrient	Planted Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Illinois:	11,200					
Nitrogen		99	1.7	92	153	1,689.5
Phosphate		87	1.0	75	77	747.9
Potash		87	1.0	105	107	1,046.8
Indiana:	6,000					
Nitrogen		100	2.2	66	146	876.7
Phosphate		96	1.4	53	72	410.9
Potash		82	1.1	96	107	525.9
Iowa:	12,200					
Nitrogen		99	1.6	77	121	1,464.3
Phosphate		75	1.1	57	63	575.4
Potash		75	1.1	67	73	668.0
Michigan:	2,600					
Nitrogen		100	1.9	62	119	309.2
Phosphate		91	1.1	44	50	117.9
Potash		94	1.4	79	108	263.8
Minnesota:	7,000					
Nitrogen		97	1.5	74	110	750.9
Phosphate		79	1.1	44	49	270.4
Potash		81	1.2	46	54	309.6
Missouri:	2,950					
Nitrogen		100	1.3	116	152	447.1
Phosphate		84	1.1	49	53	131.3
Potash		84	1.1	67	71	176.4
Nebraska:	9,000					
Nitrogen		100	2.0	75	147	1,313.1
Phosphate		80	1.0	27	28	205.2
Potash		26	1.1	13	14	33.3
Ohio:	3,600					
Nitrogen		99	2.1	76	158	567.5
Phosphate		89	1.2	60	73	234.6
Potash		89	1.1	88	98	313.6
South Dakota:	3,800					
Nitrogen		96	1.4	60	83	303.1
Phosphate		80	1.0	36	37	113.9
Potash		31	1.0	22	22	25.5
Wisconsin:	3,800					
Nitrogen		98	1.6	49	77	285.2
Phosphate		97	1.0	42	42	154.0
Potash		93	1.2	59	69	244.1
Total:	62,150					
Nitrogen		99	1.7	76	130	8,006.6
Phosphate		84	1.1	52	57	2,961.5
Potash		72	1.1	73	81	3,607.0

Corn: Active Ingredients Applied and Publication Status
By States Surveyed, 1997

Active Ingredient	States Surveyed										
	All	IL	IN	IA	MI	MN	MO	NE	OH	SD	WI
Herbicides											
2,4-D	P	P	P	P	P	P	*	P	P	P	*
Acetochlor	P	P	P	P	P	P	P	P	P	P	P
Alachlor	P	P	P	P	P	P	P	P	P	P	P
Atrazine	P	P	P	P	P	P	P	P	P	P	P
Bentazon	P	P	*	P	*	*	*		*	*	
Bromoxynil	P	P	*	P	*	P	*	P	*	P	
Butylate	*	*			*	*					
Clopyralid	P	*	*	P	*	P	*	*	*	P	*
Cyanazine	P	P	P	P	P	P	P	P	P	P	P
Dicamba	P	P	P	P	P	P	P	P	P	P	P
Dimethenamid	P	P	*	P	*	P	P	P	*	P	P
EPTC	P			*	*	P	*	*		P	
Flumetsulam	P	P	*	P	P	P	*	*	P	P	P
Glyphosate	P	P	P	*	P	*	P	P	P	P	P
Halosulfuron	P	P		*		*		P		*	P
Imazapyr	*	*	*	*							
Imazethapyr	P	*	*	*	*		*	*		*	*
Linuron	*								*		
Metolachlor	P	P	P	P	P	P	P	P	P	P	P
Metribuzin	P			*	*		*	*	*		
Nicosulfuron	P	P	P	P	P	P	*	P	*	P	P
Oxyfluorfen	*						*				
Paraquat	P	*	P		*		*	P	P		
Pendimethalin	P	*	*	*	P	P	*	*	*		P
Primisulfuron	P	P	P	P	*	P	P	P	*	P	P
Propachlor	P	*		*		*				*	
Prosulfuron	P	P	P	P	*	*	*	P	*	*	*
Pyridate	*	*						*			
Rimsulfuron	P	*	*	*		*		P		*	
Sethoxydim	*			*				*			
Simazine	P	P	*		*		*		P		
Thifensulfuron	P	*	*	*		*		P		*	
Trifluralin	*		*				*				
Insecticides											
Bifenthrin	*							*			*
Bt (Bacillus thur.)	P							P			
Carbaryl	*		*								
Carbofuran	P	*	*			*	*	P		*	
Chlorethoxyfos	P	*	P					*			
Chlorpyrifos	P	P	P	P	P	*	P	P	P	*	P
Cyfluthrin	P	P	*	P	*		*	*	*		
Dimethoate	*							*		*	
Fonofos	P	*	*	*	*	*	*				
Lambdacyhalothrin	P	*	*			*	*	*	*	*	
Methyl parathion	P	*						*			
Permethrin	P	P	*	*		*	P	P		*	
Phorate	P	*		*			*		*		*
Tebupirimphos	P	P	*	P	*		*	*	*		
Tefluthrin	P	P	P	P		*	*	P	*	P	P
Terbufos	P	P	*	P	*	*		P	*	*	*
Fungicides											
Propiconazole	*		*					*	*		

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Corn: Pesticide Use by State, 1997
Percent of Area Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied							
		Herbicide		Insecticide 1/		Fungicide		Other Chemical	
	1,000 Acres	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs
IL	11,200	98	32,733	44	4,266				
IN 2/	6,000	94	18,127	31	1,023				
IA	12,200	98	36,144	19	2,323				
MI	2,600	98	6,912	11	200				
MN	7,000	91	13,956	10	291				
MO	2,950	97	8,203	35	475				
NE 2/	9,000	98	19,970	62	3,531				
OH 2/	3,600	100	12,971	18	711				
SD	3,800	93	6,346	10	317				
WI	3,800	98	8,689	19	433				
Total	62,150	96	164,051	30	13,570	*	14		

* Applied on less than one percent of the acres.

1/ Total applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.

2/ Insufficient reports to publish data for one or more of the pesticide classes.

Corn: Agricultural Chemical Applications,
States Surveyed, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	9	1.0	0.35	0.37	2,087
Acetochlor	24	1.0	1.90	1.90	28,158
Alachlor	4	1.0	1.80	1.80	4,576
Atrazine	69	1.1	1.01	1.09	47,155
Bentazon	3	1.0	0.46	0.46	942
Bromoxynil	6	1.0	0.26	0.26	1,031
Clopyralid	3	1.0	0.07	0.07	134
Cyanazine	14	1.0	1.87	1.94	16,490
Dicamba	29	1.0	0.32	0.32	5,797
Dimethenamid	6	1.0	1.16	1.21	4,728
EPTC	1	1.0	3.71	3.71	3,173
Flumetsulam	4	1.0	0.03	0.03	82
Glyphosate	4	1.0	0.52	0.53	1,429
Halosulfuron	1	1.0	0.04	0.04	34
Imazethapyr	1	1.0	0.02	0.02	12
Metolachlor	35	1.0	1.98	2.00	43,772
Metribuzin	1	1.0	0.08	0.08	30
Nicosulfuron	10	1.0	0.03	0.03	160
Paraquat	1	1.0	0.56	0.56	381
Pendimethalin	3	1.0	1.13	1.13	1,764
Primisulfuron	8	1.0	0.02	0.02	82
Propachlor	*	1.0	1.95	1.95	347
Prosulfuron	5	1.0	0.02	0.02	50
Rimsulfuron	2	1.3	0.01	0.01	11
Simazine	1	1.0	1.36	1.36	979
Thifensulfuron	2	1.3	0.004	0.006	6
Insecticides:					
Bt (Bacillus thur.)2/	1	1.0			
Carbofuran	2	1.0	1.03	1.03	1,504
Chlorethoxyfos	2	1.0	0.16	0.16	186
Chlorpyrifos	7	1.1	1.12	1.22	5,341
Cyfluthrin	1	1.0	0.006	0.006	5
Fonofos	*	1.0	1.02	1.02	213
Lambdacyhalothrin	1	1.0	0.02	0.02	13
Methyl parathion	4	1.3	0.51	0.65	1,517
Permethrin	5	1.0	0.10	0.11	313
Phorate	1	1.0	1.20	1.20	444
Tebupirimphos	1	1.0	0.12	0.12	105
Tefluthrin	7	1.0	0.12	0.12	522
Terbufos	4	1.2	1.14	1.35	3,200

* Applied on less than one percent of the acres.
1/ Planted acres in 1997 for the 10 states surveyed were 62.2 million acres. States included are IL, IN, IA, MI, MN, MO, NE, OH, SD, and WI.
2/ Rates and total applied are not available because amounts of active ingredient are not comparable between products.

Corn: Agricultural Chemical Applications,
Illinois, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	6	1.0	0.35	0.35	229
Acetochlor	29	1.0	2.06	2.07	6,731
Alachlor	1	1.0	2.29	2.29	164
Atrazine	79	1.1	1.07	1.17	10,398
Bentazon	8	1.0	0.44	0.44	375
Bromoxynil	6	1.0	0.27	0.27	180
Cyanazine	15	1.0	2.25	2.25	3,839
Dicamba	19	1.0	0.37	0.37	803
Dimethenamid	8	1.2	1.17	1.38	1,272
Flumetsulam	1	1.0	0.06	0.06	5
Glyphosate	7	1.0	0.51	0.51	412
Halosulfuron	4	1.0	0.04	0.04	17
Metolachlor	31	1.0	2.14	2.14	7,409
Nicosulfuron	7	1.0	0.03	0.03	23
Primisulfuron	7	1.0	0.02	0.02	14
Prosulfuron	5	1.0	0.02	0.02	11
Simazine	2	1.0	1.39	1.39	357
Insecticides:					
Chlorpyrifos	16	1.0	1.16	1.16	2,105
Cyfluthrin	2	1.0	0.006	0.006	1
Permethrin	9	1.0	0.11	0.11	105
Tebupirimphos	2	1.0	0.12	0.12	22
Tefluthrin	4	1.0	0.12	0.12	57
Terbufos	4	2.0	1.24	2.49	1,117

1/ Planted acres in 1997 for Illinois were 11.2 million acres.

Corn: Agricultural Chemical Applications,
Indiana, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	11	1.0	0.39	0.39	248
Acetochlor	15	1.0	2.80	2.80	2,505
Alachlor	5	1.0	1.52	1.52	476
Atrazine	84	1.1	1.24	1.33	6,653
Cyanazine	16	1.0	1.86	1.86	1,802
Dicamba	8	1.0	0.48	0.48	235
Glyphosate	3	1.0	0.41	0.41	70
Metolachlor	52	1.0	1.83	1.83	5,695
Nicosulfuron	7	1.0	0.03	0.03	12
Paraquat	1	1.0	0.65	0.65	34
Primisulfuron	4	1.0	0.02	0.02	5
Prosulfuron	4	1.0	0.02	0.02	5
Insecticides:					
Chlorethoxyfos	10	1.0	0.16	0.16	97
Chlorpyrifos	4	1.0	1.19	1.19	267
Tefluthrin	6	1.0	0.08	0.08	31

1/ Planted acres in 1997 for Indiana were 6.00 million acres.

Corn: Agricultural Chemical Applications,
Iowa, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	9	1.1	0.31	0.33	370
Acetochlor	28	1.0	1.90	1.90	6,456
Alachlor	2	1.0	2.26	2.26	621
Atrazine	72	1.2	0.85	0.98	8,614
Bentazon	7	1.0	0.38	0.38	328
Bromoxynil	11	1.0	0.25	0.25	326
Clopyralid	4	1.0	0.05	0.05	25
Cyanazine	16	1.1	2.14	2.42	4,620
Dicamba	41	1.1	0.33	0.35	1,727
Dimethenamid	7	1.0	1.25	1.25	1,075
Flumetsulam	4	1.0	0.02	0.02	9
Metolachlor	43	1.0	2.17	2.21	11,456
Nicosulfuron	5	1.0	0.03	0.03	21
Primisulfuron	5	1.0	0.02	0.02	12
Prosulfuron	4	1.0	0.02	0.02	10
Insecticides:					
Chlorpyrifos	6	1.4	1.28	1.73	1,248
Cyfluthrin	3	1.0	0.006	0.006	2
Tebupirimphos	3	1.0	0.13	0.13	39
Tefluthrin	3	1.0	0.09	0.09	35
Terbufos	6	1.0	1.21	1.21	922

1/ Planted acres in 1997 for Iowa were 12.2 million acres.

Corn: Agricultural Chemical Applications,
Michigan, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	15	1.0	0.21	0.21	85
Acetochlor	21	1.0	2.25	2.25	1,205
Alachlor	3	1.0	1.27	1.27	85
Atrazine	72	1.0	1.22	1.27	2,384
Cyanazine	19	1.0	0.92	0.92	447
Dicamba	14	1.0	0.21	0.21	77
Flumetsulam	8	1.0	0.03	0.03	5
Glyphosate	8	1.0	0.53	0.54	119
Metolachlor	44	1.0	1.67	1.67	1,905
Nicosulfuron	10	1.0	0.02	0.02	6
Pendimethalin	6	1.0	0.96	0.96	143
Insecticides:					
Chlorpyrifos	4	1.0	1.31	1.31	153

1/ Planted acres in 1997 for Michigan were 2.60 million acres.

Corn: Agricultural Chemical Applications,
Minnesota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	9	1.0	0.24	0.25	163
Acetochlor	29	1.0	1.43	1.43	2,850
Alachlor	1	1.0	1.99	1.99	207
Atrazine	35	1.1	0.61	0.65	1,578
Bromoxynil	11	1.0	0.26	0.26	210
Clopyralid	7	1.0	0.05	0.05	24
Cyanazine	6	1.0	1.14	1.14	460
Dicamba	54	1.0	0.26	0.26	1,007
Dimethenamid	5	1.0	0.82	0.82	310
EPTC	8	1.0	3.96	3.96	2,330
Flumetsulam	7	1.0	0.02	0.02	9
Metolachlor	22	1.0	2.74	2.74	4,204
Nicosulfuron	32	1.0	0.02	0.02	50
Pendimethalin	5	1.0	1.08	1.08	365
Primisulfuron	13	1.0	0.02	0.02	16

1/ Planted acres in 1997 for Minnesota were 7.00 million acres.

Corn: Agricultural Chemical Applications,
Missouri, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acetochlor	10	1.0	2.22	2.22	679
Alachlor	5	1.0	1.97	1.97	314
Atrazine	79	1.0	1.30	1.36	3,171
Cyanazine	19	1.0	1.82	1.82	1,005
Dicamba	6	1.0	0.31	0.31	53
Dimethenamid	6	1.0	0.98	0.98	185
Glyphosate	4	1.0	0.31	0.31	40
Metolachlor	42	1.0	1.90	1.93	2,372
Primisulfuron	4	1.0	0.02	0.02	2
Insecticides:					
Chlorpyrifos	7	1.0	1.53	1.53	315
Permethrin	14	1.0	0.14	0.14	59

1/ Planted acres in 1997 for Missouri were 2.95 million acres.

Corn: Agricultural Chemical Applications,
Nebraska, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	9	1.0	0.51	0.52	417
Acetochlor	28	1.0	1.65	1.65	4,083
Alachlor	8	1.0	1.55	1.55	1,156
Atrazine	73	1.1	0.98	1.07	6,978
Bromoxynil	2	1.0	0.31	0.31	68
Cyanazine	10	1.0	1.23	1.23	1,144
Dicamba	15	1.0	0.32	0.32	418
Dimethenamid	3	1.0	1.06	1.06	249
Glyphosate	5	1.0	0.46	0.46	222
Halosulfuron	3	1.0	0.04	0.04	10
Metolachlor	35	1.0	1.39	1.43	4,522
Nicosulfuron	4	1.0	0.02	0.02	9
Paraquat	1	1.0	0.49	0.49	57
Primisulfuron	19	1.0	0.01	0.01	24
Prosulfuron	17	1.0	0.01	0.01	20
Rimsulfuron	3	1.0	0.01	0.01	2
Thifensulfuron	3	1.0	0.004	0.004	1
Insecticides:					
Bt (Bacillus thur.)2/	6	1.0			
Carbofuran	10	1.0	0.98	0.98	879
Chlorpyrifos	6	1.2	0.55	0.68	382
Permethrin	10	1.0	0.09	0.09	79
Tefluthrin	23	1.1	0.12	0.13	270
Terbufos	8	1.0	0.99	0.99	748

1/ Planted acres in 1997 for Nebraska were 9.00 million acres.
2/ Rates and total applied are not available because amounts of active ingredient are not comparable between products.

Corn: Agricultural Chemical Applications,
Ohio, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	12	1.0	0.38	0.38	164
Acetochlor	20	1.0	2.34	2.34	1,717
Alachlor	4	1.0	1.83	1.83	236
Atrazine	85	1.0	1.38	1.43	4,363
Cyanazine	20	1.1	2.61	2.77	1,984
Dicamba	20	1.0	0.22	0.22	156
Flumetsulam	4	1.0	0.06	0.06	8
Glyphosate	7	1.0	0.63	0.63	150
Metolachlor	46	1.0	1.96	2.04	3,417
Paraquat	3	1.0	0.51	0.51	49
Simazine	10	1.0	1.22	1.22	426
Insecticides:					
Chlorpyrifos	10	1.0	1.20	1.20	429

1/ Planted acres in 1997 for Ohio were 3.60 million acres.

Corn: Agricultural Chemical Applications,
South Dakota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	20	1.2	0.35	0.41	314
Acetochlor	17	1.0	1.26	1.26	811
Alachlor	6	1.0	1.08	1.08	254
Atrazine	47	1.0	0.60	0.60	1,076
Bromoxynil	4	1.0	0.26	0.26	41
Clopyralid	8	1.0	0.12	0.12	38
Cyanazine	9	1.0	1.26	1.26	409
Dicamba	52	1.0	0.28	0.28	546
Dimethenamid	12	1.0	1.62	1.62	712
EPTC	5	1.0	3.41	3.41	708
Flumetsulam	8	1.0	0.04	0.04	14
Glyphosate	6	1.2	0.36	0.43	91
Metolachlor	16	1.0	1.96	1.96	1,198
Nicosulfuron	18	1.0	0.03	0.03	18
Primisulfuron	7	1.0	0.02	0.02	5
Insecticides:					
Tefluthrin	2	1.0	0.08	0.08	7

1/ Planted acres in 1997 for South Dakota were 3.80 million acres.

Corn: Agricultural Chemical Applications,
Wisconsin, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acetochlor	15	1.0	1.92	1.92	1,122
Alachlor	12	1.0	2.38	2.38	1,063
Atrazine	64	1.0	0.79	0.80	1,940
Cyanazine	13	1.0	1.54	1.54	782
Dicamba	53	1.0	0.38	0.38	776
Dimethenamid	13	1.0	1.14	1.14	544
Flumetsulam	11	1.0	0.05	0.05	20
Glyphosate	9	1.0	0.76	0.76	268
Halosulfuron	2	1.0	0.05	0.05	4
Metolachlor	21	1.0	2.00	2.00	1,594
Nicosulfuron	16	1.0	0.03	0.03	18
Pendimethalin	8	1.0	1.63	1.63	523
Primisulfuron	4	1.0	0.02	0.02	3
Insecticides:					
Chlorpyrifos	6	1.0	1.07	1.07	254
Tefluthrin	10	1.0	0.09	0.09	32

1/ Planted acres in 1997 for Wisconsin were 3.80 million acres.

Upland Cotton

Nitrogen fertilizer was applied on 90 percent of the upland cotton acreage during 1997, in the 12 States surveyed. Five of these States treated their entire acreage, and Texas producers treated 82 percent of the acres, compared to 55 percent the previous year. The area treated with phosphate totaled 67 percent of the planted acreage in these States. South Carolina and Tennessee were the most widespread users, with 100 percent and 99 percent of their acreage being treated, respectively. Arizona and California continued as the smallest users, while the largest increases were in Arkansas and Mississippi. Arkansas showed a 17 point increase, while Mississippi's use was up 19 points from 1996. Potash was applied to 58 percent of the area planted to upland cotton in 1997. The Delta and Southeastern States were the largest users of potash, and South Carolina producers treated their entire acreage. Arkansas showed a 20 point increase in area treated, at 91 percent, while Arizona continued to be the smallest user, treating 4 percent of the acres. More than one treatment was needed for nitrogen application, and Arizona producers averaged three applications.

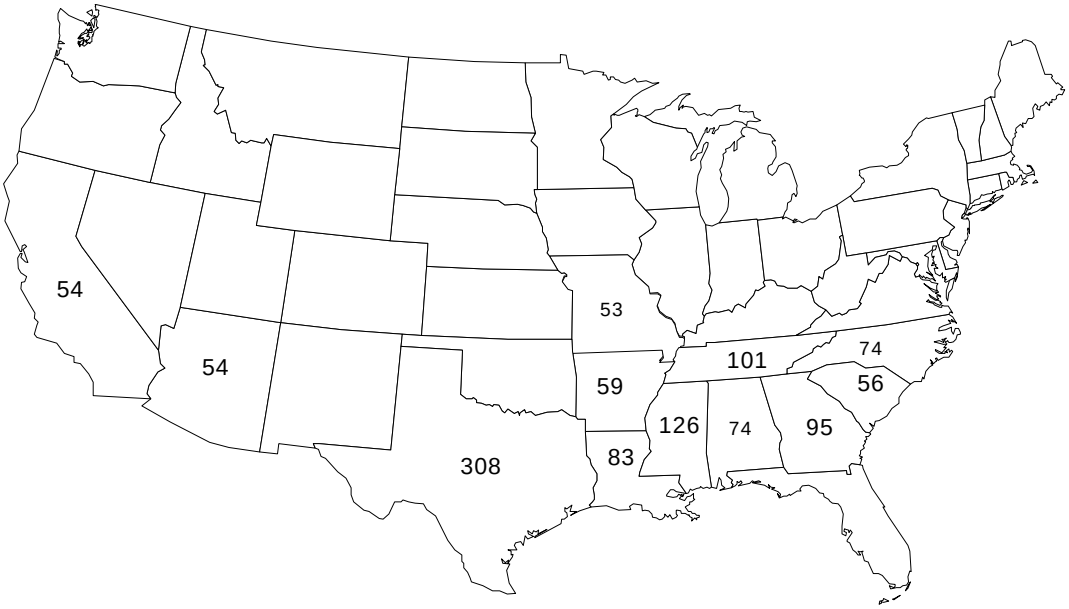
Herbicides were applied to 97 percent of the upland cotton planted acreage in the 12 States surveyed. Arizona and Louisiana showed increases of 12 points and 9 points respectively from 1996's use level. Texas showed a 7 point increase, but Arkansas showed a 10 point decline from the previous year. Trifluralin continued to be the most used herbicide, and was applied to 55 percent of the acreage. About seven tenths of a pound was applied per application.

Insecticide applications covered 77 percent of the upland cotton planted acres in 1997. Arkansas producers treated about three fourths of their acres, 16 points less than the previous year. Louisiana's use declined 21 points, but Georgia's use increased 17 points. Aldicarb was the most widely used of the insecticides, and was applied to 27 percent of the planted acreage in 1997. This was the second heaviest applied insecticide and two-thirds pound was used per application. Malathion was applied to 11 percent of the crop and had the highest total pounds applied.

Area treated with other chemicals totaled 73 percent of the 1997 acreage. Georgia showed a 37 point increase from 1996, while Tennessee showed a 8 point decrease in use of other chemicals. Texas continued to treat the smallest percent of acres, at 53 percent, but this was 14 points above 1996.

The following U.S. map shows the number of usable reports by State included in the 1997 survey. These States planted 13.1 million acres of upland cotton, representing 96 percent of the total U.S. acreage planted to the crop in 1997. The bar chart shows the top 5 active ingredients applied in 1997 compared with the previous two years.

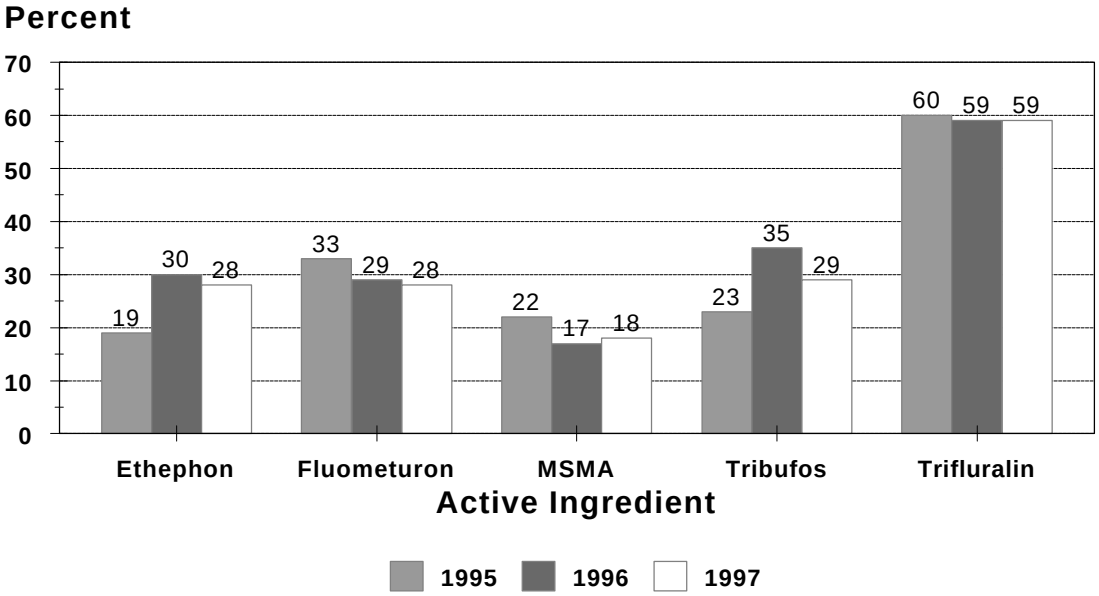
Upland Cotton: Number of Usable Reports, 1997



Upland Cotton - Percent of Acres Treated

Top 5 Active Ingredients for 1997

Comparison to 6 Comparable States



Comparable states are AZ, AR, CA, LA, MS and TX.

Upland Cotton: Fertilizer Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied					
		Nitrogen		Phosphate		Potash	
	1,000 Acres	Percent	Mil. Lbs	Percent	Mil. Lbs	Percent	Mil. Lbs
AL	535	100	47.8	93	26.8	95	40.1
AZ	325	99	41.8	29	5.2	4	0.6
AR	950	92	67.2	83	42.5	91	57.6
CA	880	96	122.7	25	13.4	26	16.7
GA	1,440	95	126.3	94	81.4	99	132.0
LA	630	98	48.5	71	22.8	76	33.8
MS	985	100	107.3	46	22.6	77	72.1
MO	380	100	42.6	72	10.0	95	28.1
NC	670	92	38.4	64	16.6	85	56.8
SC	290	100	26.8	100	15.8	100	34.2
TN	490	100	44.8	99	27.4	99	42.9
TX	5,500	82	280.9	62	126.3	29	25.8
Total	13,075	90	995.1	67	410.8	58	540.7

Upland Cotton: Fertilizer Primary Nutrient Applications,
States Surveyed and Total, 1997

Primary Nutrient	Planted Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Alabama:	535					
Nitrogen		100	1.5	58	89	47.8
Phosphate		93	1.2	46	54	26.8
Potash		95	1.2	66	79	40.1
Arizona:	325					
Nitrogen		99	3.0	43	130	41.8
Phosphate		29	1.1	49	55	5.2
Potash		4	1.2	37	46	0.6
Arkansas:	950					
Nitrogen		92	1.6	48	77	67.2
Phosphate		83	1.1	50	54	42.5
Potash		91	1.1	62	67	57.6
California:	880					
Nitrogen		96	1.6	88	145	122.7
Phosphate		25	1.1	54	60	13.4
Potash		26	1.5	47	72	16.7
Georgia:	1,440					
Nitrogen		95	2.1	43	92	126.3
Phosphate		94	1.2	50	60	81.4
Potash		99	1.3	74	93	132.0

--continued

Upland Cotton: Fertilizer Primary Nutrient Applications,
States Surveyed and Total, 1997 (continued)

Primary Nutrient	Planted Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Louisiana:	630					
Nitrogen		98	1.2	64	79	48.5
Phosphate		71	1.1	47	51	22.8
Potash		76	1.1	66	70	33.8
Mississippi:	985					
Nitrogen		100	1.6	69	109	107.3
Phosphate		46	1.0	50	50	22.6
Potash		77	1.1	86	95	72.1
Missouri:	380					
Nitrogen		100	1.7	64	112	42.6
Phosphate		72	1.0	37	37	10.0
Potash		95	1.0	78	78	28.1
North Carolina:	670					
Nitrogen		92	1.7	37	62	38.4
Phosphate		64	1.1	35	38	16.6
Potash		85	1.3	76	99	56.8
South Carolina:	290					
Nitrogen		100	1.9	49	92	26.8
Phosphate		100	1.2	44	54	15.8
Potash		100	1.1	105	118	34.2
Tennessee:	490					
Nitrogen		100	1.4	67	92	44.8
Phosphate		99	1.0	55	56	27.4
Potash		99	1.0	87	88	42.9
Texas:	5,500					
Nitrogen		82	1.6	40	63	280.9
Phosphate		62	1.1	35	37	126.3
Potash		29	1.0	15	16	25.8
Total:	13,075					
Nitrogen		90	1.7	50	84	995.1
Phosphate		67	1.1	43	47	410.8
Potash		58	1.1	63	71	540.7

Upland Cotton: Active Ingredients Applied and Publication Status
By States Surveyed, 1997

Active Ingredient	States Surveyed						
	All	AL	AZ	AR	CA	GA	LA
Herbicides							
2,4-D	*						
2,4-DB	*						
Bromoxynil	P	*		*			
Clethodim	P	*	*	*		*	*
Clomazone	P	P		P		*	P
Cyanazine	P	P	P	P	P	P	P
DSMA	P	P	*	P		P	P
Dicamba	P	*	*		*		
Diuron	P	P	P	*	*	*	P
EPTC	*				*		
Fenoxaprop	*						
Fluazifop-P-butyl	P	*	*	*	P	*	P
Fluometuron	P	P	*	P		P	P
Fomesafen	*	*					
Glyphosate	P	P	*	P	P	P	P
Imazamethabenz	*						
Lactofen	P						*
Linuron	*						
MSMA	P	P	*	P	*	P	P
Metolachlor	P	*		*			P
Norflurazon	P	P	*	P		P	P
Oxyfluorfen	P				*		
Pendimethalin	P	P	P	P	P	P	P
Primisulfuron	*	*					
Prometryn	P	P	P	P	*	*	P
Pyrithiobac-sodium	P	P	P	P	P	P	P
Quizalofop-ethyl	P			P		*	*
Sethoxydim	P	*			*	*	*
Trifluralin	P	P	P	P	P	P	P
Insecticides							
AC303-630	*	*					*
Abamectin	P				P		
Acephate	P	P	P	*	*	*	P
Aldicarb	P	P	P	P	P	P	P
Amitraz	P		*		P	*	*
Azinphos-methyl	P			*			*
Bifenthrin	*		*		*		
Bt (Bacillus thur.)	P				*	*	*
Buprofezin	P		P		*		
Carbaryl	*	*					
Carbofuran	P	*		*			*
Chlorfenapyr	*				*		
Chlorpyrifos	P	*	P		P	*	*
Cyfluthrin	P	*		P	P	P	P
Cypermethrin	P	*	*	*	*	P	P
Deltamethrin	P	*	*	*		*	P
Dicofol	P				P		
Dicrotophos	P	P		P		*	P
Diflubenzuron	*					*	
Dimethoate	P	*	P	*	*	*	P

--continued

Upland Cotton: Active Ingredients Applied and Publication Status
By States Surveyed, 1997 (continued)

Active Ingredient	States Surveyed					
	MS	MO	NC	SC	TN	TX
Herbicides						
2,4-D		*		*		*
2,4-DB					*	
Bromoxynil	*	*	*		*	*
Clethodim	P				P	P
Clomazone	P	P	P	*	P	*
Cyanazine	P	P	P	P	P	*
DSMA	*	*	*	*	P	*
Dicamba		*				*
Diuron	P	*	*		P	P
EPTC						
Fenoxaprop	*				*	
Fluazifop-P-butyl	*		*	*	P	P
Fluometuron	P	P	P	P	P	P
Fomesafen						
Glyphosate	P	P	P	P	P	P
Imazamethabenz	*					
Lactofen	P	*	*	*		
Linuron	*			*		
MSMA	P	P	P	P	P	P
Metolachlor	P	*	P		P	P
Norflurazon	P	P	*	*	*	P
Oxyfluorfen	*					
Pendimethalin	P	P	P	P	P	P
Primisulfuron						
Prometryn	P	*	P	*	P	P
Pyrithiobac-sodium	P	P	P	P	P	P
Quizalofop-ethyl		*	*	*	*	*
Sethoxydim			P		*	
Trifluralin	P	P	P	P	P	P
Insecticides						
AC303-630						
Abamectin						
Acephate	P	*	P	P	P	P
Aldicarb	P	P	P	P	P	P
Amitraz						
Azinphos-methyl	P	*			P	P
Bifenthrin						*
Bt (Bacillus thur.)	*					P
Buprofezin						
Carbaryl						*
Carbofuran			*			P
Chlorfenapyr						
Chlorpyrifos					*	*
Cyfluthrin	P	P	P	P	P	P
Cypermethrin	P	*	*	*	*	P
Deltamethrin	*		*	*	*	*
Dicofol						
Dicrotophos	P		*		P	P
Diflubenzuron						
Dimethoate	*	*			P	P

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Upland Cotton: Active Ingredients Applied and Publication Status
By States Surveyed, 1997 (continued)

Active Ingredient	All	States Surveyed AL	AZ	AR	CA	GA	LA
Insecticides							
Disulfoton	P	P		*		*	*
Endosulfan	P		P	*			*
Esfenvalerate	P	*		*		P	P
Fenpropathrin	P		P		*		
Imidacloprid	P		*	*	P	*	P
Lambdacyhalothrin	P	P	P	P		P	P
Malathion	P		*	*	*		P
Methamidophos	P		*		*		*
Methidathion	*		*				
Methomyl	P	P	P	*	*	P	*
Methyl parathion	P	*	*	P		*	P
Naled	P				P		
Oxamyl	P	*	P	P	*	*	P
Oxydemeton-methyl	*				*		
Permethrin	*					*	*
Petroleum distillate	*						
Phorate	P	P		*	P	P	*
Profenofos	P	*	*	*	P	P	P
Propargite	P				P		
Pyriproxyfen	P		P		*		
Sulfur	*		*		*		
Sulprofos	*	*		*			
Thiodicarb	P	*			*	P	P
Tralomethrin	P			*		P	*
Zeta-cypermethrin	P	*	*	P	*	P	P
Fungicides							
Carboxin	*				*		
Etridiazole	P	*		*			*
Iprodione	*	*					
Mancozeb	*						
Metalaxyl	P	P		*	*		P
PCNB	P	P	*	P	*		P
Other Chemicals							
Cacodylic acid	P	*	*	*	*	*	*
Chloropicrin	*		*			*	
Cyclanilide	P	P					*
Cytokinins	*						
Dichloropropene	*		*			*	
Dimethipin	P	*		*	*	P	P
Endothall	P	*	*		*		
Ethephon	P	P	P	P	P	P	P
Gibberellic acid	*		*				
Gossyplure	*		*				
IBA	*		*				
Mepiquat chloride	P	P	P	P	P	P	P
Metam-sodium	*				*		
Paraquat	P	P	P	*	P	P	P
Sodium chlorate	P	P	P	*	P	P	P
Thidiazuron	P	P	P	P	*	P	P
Tribufos	P	P	P	P	P	P	P

--continued

Upland Cotton: Active Ingredients Applied and Publication Status
By States Surveyed, 1997 (continued)

Active Ingredient	States Surveyed					
	MS	MO	NC	SC	TN	TX
Insecticides						
Disulfoton	P	P	P	*	P	*
Endosulfan	*			*	*	P
Esfenvalerate	P		*	P	*	*
Fenpropathrin					*	
Imidacloprid	P	*			*	*
Lambdacyhalothrin	P	*	P	P	P	P
Malathion	P	*			P	P
Methamidophos	*					*
Methidathion					*	
Methomyl		*				*
Methyl parathion	P	*		*	P	P
Naled				*		*
Oxamyl	P	P			P	P
Oxydemeton-methyl						*
Permethrin	*	*				
Petroleum distillate		*				
Phorate	P	*	P		*	P
Profenofos	P	*			*	*
Propargite						
Pyriproxyfen						
Sulfur						
Sulprofos	*	*			*	
Thiodicarb	*		*	*	*	*
Tralomethrin	P		*	*		*
Zeta-cypermethrin	P	*	*		*	P
Fungicides						
Carboxin	*					
Etridiazole	P	*	*		P	
Iprodione	*			*		
Mancozeb		*				
Metalaxyl	P	*	*	P	P	
PCNB	P	*	*		P	
Other Chemicals						
Cacodylic acid	*	*	*	*		*
Chloropicrin						
Cyclanilide	P	*	P	*	P	*
Cytokinins						*
Dichloropropene						
Dimethipin	P	P	P	*	P	*
Endothall			*		*	P
Ethephon	P	P	P	P	P	P
Gibberellic acid	*	*	*		*	*
Gossyplure						
IBA	*	*	*		*	*
Mepiquat chloride	P	P	P	P	P	P
Metam-sodium						
Paraquat	P	P	P	*	P	P
Sodium chlorate	P		*	*	P	P
Thidiazuron	P	P	P	*	P	P
Tribufos	P	P	P	P	P	P

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Upland Cotton: Pesticide Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied							
		Herbicide		Insecticide 1/		Fungicide		Other Chemical	
	1,000 Acres	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs
AL	535	100	1,667	85	469	17	22	69	482
AZ 2/	325	87	534	85	705			86	770
AR	950	89	2,882	77	678	10	83	84	1,335
CA 2/	880	93	1,227	92	2,242			98	3,471
GA	1,440	100	4,623	90	895			85	4,397
LA	630	90	2,331	85	1,789	19	85	66	469
MS	985	100	3,124	100	3,972	30	447	97	1,556
MO 2/	380	100	839	71	210			99	573
NC 2/	670	97	1,832	92	339			96	1,093
SC	290	100	875	98	241	18	5	96	467
TN	490	98	1,275	85	417	29	123	79	551
TX	5,500	97	6,401	62	6,327			53	2,398
Total	13,075	97	27,611	77	18,282	7	897	73	17,561

1/ Total Applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.
2/ Insufficient reports to publish data for one or more of the pesticide classes.

Upland Cotton: Agricultural Chemical Applications,
States Surveyed, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Bromoxynil	1	1.7	0.25	0.43	46
Clethodim	2	1.1	0.13	0.14	37
Clomazone	8	1.0	0.45	0.45	500
Cyanazine	18	1.3	0.72	0.95	2,202
DSMA	4	1.1	1.19	1.27	721
Dicamba	1	1.1	0.64	0.68	59
Diuron	12	1.1	0.51	0.55	883
Fluazifop-P-butyl	3	1.0	0.12	0.13	45
Fluometuron	44	1.3	0.65	0.84	4,847
Glyphosate	14	1.3	0.61	0.81	1,542
Lactofen	1	1.1	0.15	0.16	16
MSMA	29	1.4	0.92	1.30	4,899
Metolachlor	5	1.1	1.05	1.17	735
Norflurazon	13	1.0	0.61	0.63	1,039
Oxyfluorfen	1	1.2	0.31	0.37	30
Pendimethalin	28	1.1	0.65	0.69	2,491
Prometryn	19	1.2	0.55	0.66	1,669
Pyrithiobac-sodium	23	1.2	0.05	0.06	171
Quizalofop-ethyl	1	1.3	0.06	0.08	14
Sethoxydim	1	1.0	0.21	0.21	21
Trifluralin	55	1.1	0.70	0.76	5,461
Insecticides:					
Abamectin	4	1.1	0.007	0.008	4
Acephate	10	1.7	0.43	0.72	898
Aldicarb	27	1.0	0.66	0.68	2,428
Amitraz	1	1.2	0.23	0.28	42
Azinphos-methyl	5	2.0	0.23	0.46	293
Bt (Bacillus thur.)2/	2	1.6			
Buprofezin	*	1.0	0.35	0.35	16
Carbofuran	3	1.0	0.31	0.32	113
Chlorpyrifos	4	1.9	0.75	1.45	805
Cyfluthrin	13	1.7	0.03	0.05	92
Cypermethrin	8	1.7	0.08	0.14	137
Deltamethrin	3	1.9	0.003	0.007	3
Dicofol	2	1.0	1.13	1.13	255
Dicrotophos	8	1.7	0.21	0.35	377
Dimethoate	2	1.3	0.31	0.40	127
Disulfoton	4	1.0	0.60	0.61	282
Endosulfan	2	2.3	0.39	0.88	267
Esfenvalerate	4	2.0	0.03	0.07	34
Fenpropathrin	1	1.1	0.17	0.19	13
Imidacloprid	6	1.3	0.04	0.06	47
Lambdacyhalothrin	18	1.9	0.03	0.05	131
Malathion	11	5.9	0.84	4.97	7,246
Methamidophos	1	1.4	0.11	0.16	11
Methomyl	2	1.7	0.28	0.46	103
Methyl parathion	13	2.7	0.45	1.22	1,996
Naled	2	1.1	0.78	0.88	185
Oxamyl	15	1.6	0.21	0.33	648

--continued

Upland Cotton: Agricultural Chemical Applications,
States Surveyed, 1997 1/ (continued)

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Insecticides: (cont.)					
Phorate	7	1.0	0.73	0.73	667
Profenofos	4	1.6	0.62	0.98	558
Propargite	1	1.1	1.59	1.68	138
Pyriproxyfen	1	1.0	0.05	0.05	6
Thiodicarb	4	1.5	0.30	0.46	226
Tralomethrin	2	2.1	0.02	0.04	11
Zeta-cypermethrin	5	1.4	0.04	0.05	33
Fungicides:					
Etridiazole	2	1.0	0.20	0.20	53
Metalaxyl	4	1.0	0.08	0.08	37
PCNB	4	1.0	1.03	1.04	589
Other Chemicals:					
Cacodylic acid	3	1.0	1.11	1.11	383
Cyclanilide	2	1.0	0.14	0.14	31
Dimethipin	4	1.0	0.25	0.25	124
Endothall	1	1.0	0.04	0.04	7
Ethephon	34	1.0	0.99	1.02	4,570
Mepiquat chloride	26	1.5	0.02	0.03	111
Paraquat	24	1.1	0.29	0.30	940
Sodium chlorate	10	1.0	2.15	2.24	2,884
Thidiazuron	23	1.1	0.14	0.15	452
Tribufos	37	1.1	0.77	0.83	3,997

* Applied on less than one percent of the acres.
1/ Planted acres in 1997 for the 12 states surveyed were 13.1 million acres. States included are AL, AZ, AR, CA, GA, LA, MS, MO, NC, SC, TN, and TX.
2/ Rates and total applied are not available because amounts of active ingredient are not comparable between products.

Upland Cotton: Agricultural Chemical Applications, Alabama, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clomazone	29	1.0	0.58	0.58	91
Cyanazine	35	1.0	0.71	0.71	132
DSMA	28	1.1	1.08	1.17	177
Diuron	17	1.2	0.57	0.68	63
Fluometuron	84	1.1	0.67	0.75	337
Glyphosate	21	1.4	0.64	0.88	101
MSMA	48	1.3	1.08	1.43	368
Norflurazon	7	1.0	0.57	0.57	20
Pendimethalin	21	1.0	0.68	0.68	78
Prometryn	17	1.0	0.36	0.37	33
Pyrithiobac-sodium	22	1.0	0.05	0.05	6
Trifluralin	62	1.0	0.65	0.66	216
Insecticides:					
Acephate	11	1.5	0.52	0.76	44
Aldicarb	33	1.0	0.65	0.65	116
Dicrotophos	22	1.1	0.20	0.21	25
Disulfoton	11	1.0	0.69	0.69	39
Lambdacyhalothrin	31	1.6	0.04	0.05	9
Methomyl	5	1.8	0.23	0.43	12
Phorate	15	1.0	0.94	0.94	74
Fungicides:					
Metalaxyl	12	1.0	0.08	0.08	5
PCNB	7	1.0	0.40	0.40	14
Other Chemicals:					
Cyclanilide	11	1.0	0.13	0.13	7
Ethephon	43	1.0	0.89	0.89	205
Mepiquat chloride	31	1.2	0.02	0.03	5
Paraquat	10	1.5	0.61	0.91	51
Sodium chlorate	9	1.0	0.88	0.88	42
Thidiazuron	7	1.0	0.05	0.05	2
Tribufos	34	1.0	0.90	0.91	164

1/ Planted acres in 1997 for Alabama were 535,000 acres.

Upland Cotton: Agricultural Chemical Applications, Arizona, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Cyanazine	23	1.1	0.94	1.04	77
Diuron	54	1.1	0.33	0.38	67
Pendimethalin	26	1.0	0.90	0.90	77
Prometryn	42	1.4	0.75	1.05	145
Pyrithiobac-sodium	9	1.1	0.07	0.08	2
Trifluralin	32	1.1	0.60	0.65	67
Insecticides:					
Acephate	52	1.6	0.66	1.04	176
Aldicarb	16	1.0	1.33	1.38	72
Buprofezin	13	1.0	0.35	0.35	14
Chlorpyrifos	41	2.5	0.58	1.46	196
Dimethoate	17	1.0	0.43	0.43	25
Endosulfan	27	1.7	0.54	0.90	78
Fenpropathrin	18	1.0	0.18	0.18	11
Lambdacyhalothrin	22	1.5	0.03	0.04	3
Methomyl	14	2.1	0.41	0.84	38
Oxamyl	14	1.1	0.56	0.60	27
Pyriproxyfen	30	1.0	0.05	0.05	5
Other Chemicals:					
Ethephon	7	1.0	0.40	0.40	10
Mepiquat chloride	24	1.0	0.03	0.03	3
Paraquat	17	1.0	0.15	0.15	8
Sodium chlorate	32	1.1	3.99	4.29	450
Thidiazuron	62	1.1	0.40	0.42	86
Tribufos	14	1.1	0.97	1.09	51

1/ Planted acres in 1997 for Arizona were 325,000 acres.

Upland Cotton: Agricultural Chemical Applications, Arkansas, 1997 1/

Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clomazone	16	1.0	0.50	0.50	75
Cyanazine	34	1.5	0.56	0.82	267
DSMA	7	1.4	1.78	2.46	159
Fluometuron	65	1.1	0.54	0.57	352
Glyphosate	20	1.5	0.41	0.61	118
MSMA	48	1.4	1.27	1.73	782
Norflurazon	50	1.0	0.67	0.69	325
Pendimethalin	41	1.1	0.62	0.69	267
Prometryn	22	1.2	0.52	0.65	138
Pyrithiobac-sodium	68	1.0	0.04	0.04	27
Quizalofop-ethyl	7	1.4	0.04	0.06	4
Trifluralin	32	1.0	0.73	0.73	219
Insecticides:					
Aldicarb	29	1.1	0.52	0.56	158
Cyfluthrin	19	1.4	0.03	0.04	7
Dicrotophos	6	1.6	0.18	0.29	17
Lambdacyhalothrin	18	1.4	0.03	0.04	7
Methyl parathion	13	1.6	0.68	1.12	138
Oxamyl	28	1.6	0.21	0.33	86
Zeta-cypermethrin	12	1.5	0.03	0.05	6
Fungicides:					
PCNB	9	1.0	0.84	0.84	70
Other Chemicals:					
Ethephon	63	1.0	1.00	1.00	598
Mepiquat chloride	31	1.4	0.02	0.03	8
Thidiazuron	22	1.0	0.05	0.05	11
Tribufos	66	1.2	0.67	0.77	488

1/ Planted acres in 1997 for Arkansas were 950,000 acres.

Upland Cotton: Agricultural Chemical Applications, California, 1997 1/

Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Cyanazine	22	1.4	1.47	2.07	408
Fluazifop-P-butyl	4	1.0	0.21	0.21	8
Glyphosate	12	1.0	0.73	0.73	78
Pendimethalin	29	1.0	0.80	0.80	202
Pyrithiobac-sodium	16	1.0	0.07	0.07	10
Trifluralin	37	1.0	0.71	0.72	236
Insecticides:					
Abamectin	55	1.1	0.007	0.008	4
Aldicarb	46	1.2	1.12	1.34	540
Amitraz	12	1.0	0.31	0.31	34
Chlorpyrifos	40	1.8	0.88	1.63	572
Cyfluthrin	11	1.0	0.04	0.04	4
Dicofol	26	1.0	1.13	1.13	255
Imidacloprid	55	1.5	0.05	0.07	34
Naled	23	1.1	0.80	0.91	182
Phorate	15	1.0	0.92	0.92	122
Profenofos	7	1.0	0.86	0.86	54
Propargite	9	1.1	1.59	1.68	138
Other Chemicals:					
Ethephon	43	1.0	1.33	1.33	503
Mepiquat chloride	46	1.2	0.03	0.04	15
Paraquat	68	1.0	0.29	0.30	177
Sodium chlorate	34	1.1	3.45	3.79	1,123
Tribufos	30	1.0	1.50	1.50	399

1/ Planted acres in 1997 for California were 880,000 acres.

Upland Cotton: Agricultural Chemical Applications, Georgia, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Cyanazine	19	1.2	0.76	0.94	261
DSMA	5	1.0	0.87	0.87	57
Fluometuron	85	1.6	0.60	0.94	1,153
Glyphosate	17	1.3	0.66	0.89	212
MSMA	77	1.4	0.91	1.26	1,399
Norflurazon	20	1.2	0.87	1.02	293
Pendimethalin	50	1.1	0.64	0.72	515
Pyrithiobac-sodium	14	1.0	0.07	0.07	15
Trifluralin	50	1.0	0.92	0.92	657
Insecticides:					
Aldicarb	40	1.0	0.61	0.61	351
Cyfluthrin	10	2.2	0.04	0.09	12
Cypermethrin	21	2.9	0.09	0.26	77
Esfenvalerate	10	2.7	0.03	0.08	12
Lambdacyhalothrin	42	1.9	0.03	0.06	39
Methomyl	5	1.4	0.36	0.49	36
Phorate	6	1.0	0.83	0.83	76
Profenofos	4	1.7	0.75	1.29	74
Thiodicarb	8	1.7	0.45	0.77	87
Tralomethrin	7	2.8	0.02	0.05	5
Zeta-cypermethrin	8	1.5	0.04	0.06	7
Other Chemicals:					
Dimethipin	8	1.0	0.28	0.28	33
Ethephon	43	1.0	1.21	1.21	755
Mepiquat chloride	48	1.7	0.02	0.04	25
Paraquat	15	1.0	0.25	0.25	54
Sodium chlorate	6	1.0	1.21	1.21	113
Thidiazuron	46	1.0	0.11	0.11	72
Tribufos	56	1.0	0.68	0.68	543

1/ Planted acres in 1997 for Georgia were 1.44 million acres.

Upland Cotton: Agricultural Chemical Applications, Louisiana, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clomazone	17	1.0	0.59	0.61	67
Cyanazine	23	2.1	0.71	1.51	218
DSMA	8	1.0	0.83	0.83	41
Diuron	28	1.3	0.73	0.95	170
Fluazifop-P-butyl	8	1.1	0.14	0.16	8
Fluometuron	75	1.2	0.63	0.75	355
Glyphosate	12	1.9	0.44	0.85	64
MSMA	55	2.0	0.81	1.59	553
Metolachlor	17	1.4	1.29	1.76	190
Norflurazon	5	1.0	0.55	0.55	16
Pendimethalin	6	1.0	0.75	0.75	27
Prometryn	44	2.2	0.86	1.86	520
Pyrithiobac-sodium	30	1.4	0.03	0.05	9
Trifluralin	27	1.2	0.41	0.50	85
Insecticides:					
Acephate	23	3.6	0.29	1.07	154
Aldicarb	38	1.2	0.55	0.65	153
Cyfluthrin	22	2.5	0.03	0.09	12
Cypermethrin	8	2.3	0.14	0.31	15
Deltamethrin	12	4.1	0.003	0.010	1
Dicrotophos	16	1.6	0.21	0.33	34
Dimethoate	4	3.4	0.19	0.64	16
Esfenvalerate	8	2.8	0.05	0.15	8
Imidacloprid	7	1.6	0.02	0.04	2
Lambdacyhalothrin	39	3.1	0.03	0.08	20
Malathion	4	6.8	0.74	5.02	141
Methyl parathion	63	4.3	0.56	2.40	955
Oxamyl	17	1.6	0.25	0.40	42
Profenofos	12	2.7	0.37	1.02	77
Thiodicarb	16	2.4	0.15	0.36	37
Zeta-cypermethrin	7	2.2	0.04	0.09	4
Fungicides:					
Metalaxyl	9	1.0	0.08	0.08	4
PCNB	15	1.0	0.82	0.83	80
Other Chemicals:					
Dimethipin	6	1.0	0.35	0.35	13
Ethephon	27	1.0	0.57	0.59	101
Mepiquat chloride	11	3.4	0.01	0.05	3
Paraquat	11	1.3	0.58	0.77	52
Sodium chlorate	10	1.0	2.89	2.89	181
Thidiazuron	36	1.0	0.05	0.06	13
Tribufos	31	1.0	0.55	0.55	106

1/ Planted acres in 1997 for Louisiana were 630,000 acres.

Upland Cotton: Agricultural Chemical Applications, Mississippi, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clethodim	6	1.0	0.09	0.09	5
Clomazone	24	1.0	0.43	0.44	102
Cyanazine	68	1.4	0.60	0.83	558
Diuron	29	1.0	0.57	0.58	165
Fluometuron	88	1.2	0.60	0.71	609
Glyphosate	29	1.3	0.59	0.80	231
Lactofen	6	1.0	0.16	0.16	10
MSMA	61	1.6	0.74	1.18	715
Metolachlor	7	1.0	0.68	0.68	44
Norflurazon	21	1.0	0.34	0.34	71
Pendimethalin	24	1.0	0.56	0.56	132
Prometryn	25	1.2	0.39	0.46	112
Pyrithiobac-sodium	59	1.4	0.05	0.07	40
Trifluralin	44	1.0	0.67	0.67	294
Insecticides:					
Acephate	39	1.7	0.38	0.65	246
Aldicarb	39	1.0	0.59	0.59	226
Azinphos-methyl	4	2.1	0.20	0.42	17
Cyfluthrin	28	1.8	0.03	0.06	16
Cypermethrin	18	1.4	0.05	0.07	13
Dicrotophos	40	2.3	0.26	0.58	231
Disulfoton	10	1.1	0.82	0.86	87
Esfenvalerate	10	2.2	0.03	0.06	6
Imidacloprid	9	1.2	0.03	0.03	3
Lambdacyhalothrin	27	1.9	0.03	0.05	14
Malathion	34	8.5	0.72	6.09	2,067
Methyl parathion	63	2.8	0.35	0.98	605
Oxamyl	28	2.1	0.23	0.47	130
Phorate	6	1.0	0.89	0.89	52
Profenofos	19	1.6	0.57	0.90	168
Tralomethrin	4	1.5	0.02	0.04	1
Zeta-cypermethrin	10	1.4	0.04	0.06	6
Fungicides:					
Etridiazole	6	1.0	0.19	0.19	11
Metalaxyl	19	1.0	0.08	0.08	15
PCNB	16	1.0	1.56	1.56	251
Other Chemicals:					
Cyclanilide	3	1.0	0.12	0.12	4
Dimethipin	2	1.0	0.27	0.27	7
Ethephon	39	1.1	0.83	0.92	351
Mepiquat chloride	36	1.8	0.02	0.04	13
Paraquat	17	1.1	0.43	0.47	77
Sodium chlorate	21	1.0	1.29	1.29	262
Thidiazuron	59	1.2	0.10	0.12	69
Tribufos	65	1.3	0.85	1.08	693

1/ Planted acres in 1997 for Mississippi were 985,000 acres.

Upland Cotton: Agricultural Chemical Applications, Missouri, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clomazone	17	1.0	0.24	0.24	15
Cyanazine	34	1.0	0.45	0.45	58
Fluometuron	83	1.0	0.58	0.60	191
Glyphosate	18	1.3	0.69	0.90	63
MSMA	34	1.2	0.60	0.69	90
Norflurazon	27	1.0	0.52	0.52	53
Pendimethalin	29	1.1	0.64	0.70	76
Pyrithiobac-sodium	66	1.0	0.08	0.08	21
Trifluralin	62	1.0	0.70	0.70	165
Insecticides:					
Aldicarb	43	1.0	0.63	0.63	103
Cyfluthrin	18	1.0	0.04	0.04	3
Disulfoton	15	1.0	0.42	0.42	25
Oxamyl	9	1.3	0.13	0.17	6
Other Chemicals:					
Dimethipin	10	1.0	0.25	0.25	10
Ethephon	76	1.1	1.10	1.24	356
Mepiquat chloride	28	1.2	0.03	0.03	3
Paraquat	10	1.6	0.42	0.66	26
Thidiazuron	33	1.0	0.18	0.18	23
Tribufos	57	1.0	0.54	0.55	121

1/ Planted acres in 1997 for Missouri were 380,000 acres.

Upland Cotton: Agricultural Chemical Applications,
North Carolina, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clomazone	10	1.0	0.50	0.50	32
Cyanazine	19	1.1	0.51	0.55	69
Fluometuron	81	1.9	0.72	1.36	733
Glyphosate	22	1.3	0.75	0.99	147
MSMA	51	1.2	0.91	1.08	369
Metolachlor	7	1.8	0.45	0.81	36
Pendimethalin	38	1.0	0.62	0.62	157
Prometryn	15	1.0	0.78	0.78	81
Pyrithiobac-sodium	28	1.5	0.03	0.05	9
Sethoxydim	2	1.0	0.24	0.24	4
Trifluralin	22	1.0	0.93	0.93	134
Insecticides:					
Acephate	10	1.0	0.22	0.22	15
Aldicarb	39	1.0	0.69	0.69	179
Cyfluthrin	30	1.4	0.03	0.05	9
Disulfoton	5	1.0	0.51	0.51	17
Lambdacyhalothrin	41	2.2	0.03	0.06	17
Phorate	14	1.0	0.86	0.86	79
Other Chemicals:					
Cyclanilide	4	1.0	0.20	0.20	6
Dimethipin	5	1.0	0.20	0.20	7
Ethephon	61	1.0	1.05	1.06	436
Mepiquat chloride	43	1.4	0.02	0.03	9
Paraquat	12	1.0	0.39	0.39	32
Thidiazuron	30	1.0	0.04	0.04	9
Tribufos	65	1.0	1.01	1.01	439

1/ Planted acres in 1997 for North Carolina were 670,000 acres.

Upland Cotton: Agricultural Chemical Applications,
South Carolina, 1997 1/

Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Cyanazine	34	1.0	0.85	0.85	83
Fluometuron	84	1.3	0.66	0.89	217
Glyphosate	11	1.2	0.64	0.75	24
MSMA	59	1.3	0.95	1.20	205
Pendimethalin	17	1.0	0.75	0.75	37
Pyrithiobac-sodium	53	1.2	0.05	0.07	10
Trifluralin	71	1.0	1.03	1.03	212
Insecticides:					
Acephate	15	1.3	0.66	0.87	38
Aldicarb	62	1.0	0.95	0.95	171
Cyfluthrin	27	3.1	0.02	0.07	6
Esfenvalerate	11	1.7	0.02	0.04	1
Lambdacyhalothrin	44	3.0	0.02	0.06	8
Fungicides:					
Metalaxyl	18	1.0	0.09	0.09	5
Other Chemicals:					
Ethephon	56	1.0	1.04	1.05	169
Mepiquat chloride	43	2.0	0.02	0.04	5
Tribufos	82	1.1	0.99	1.08	257

1/ Planted acres in 1997 for South Carolina were 290,000 acres.

Upland Cotton: Agricultural Chemical Applications, Tennessee, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clethodim	6	1.0	0.13	0.13	4
Clomazone	41	1.0	0.26	0.26	52
Cyanazine	16	1.1	0.74	0.81	64
DSMA	12	1.0	1.73	1.73	102
Diuron	3	1.5	0.59	0.89	11
Fluazifop-P-butyl	7	1.0	0.10	0.10	4
Fluometuron	92	1.0	1.07	1.08	488
Glyphosate	31	1.6	0.64	1.02	157
MSMA	21	1.2	0.91	1.05	108
Metolachlor	7	1.0	1.12	1.12	41
Pendimethalin	33	1.0	0.72	0.72	118
Prometryn	4	1.0	0.53	0.53	10
Pyrithiobac-sodium	31	1.0	0.05	0.05	8
Trifluralin	25	1.3	0.62	0.81	102
Insecticides:					
Acephate	7	1.1	0.20	0.21	7
Aldicarb	30	1.0	0.58	0.58	84
Azinphos-methyl	20	1.4	0.25	0.34	33
Cyfluthrin	21	1.4	0.03	0.04	4
Dicrotophos	5	1.3	0.18	0.24	6
Dimethoate	6	1.2	0.30	0.35	11
Disulfoton	21	1.0	0.60	0.60	61
Lambdacyhalothrin	17	2.4	0.02	0.04	3
Malathion	5	4.4	0.98	4.33	96
Methyl parathion	11	2.2	0.52	1.13	62
Oxamyl	26	1.3	0.13	0.17	22
Fungicides:					
Etridiazole	21	1.0	0.22	0.22	23
Metalaxyl	7	1.0	0.11	0.11	4
PCNB	23	1.0	0.85	0.85	96
Other Chemicals:					
Cyclanilide	5	1.0	0.17	0.17	4
Dimethipin	2	1.0	0.30	0.30	4
Ethephon	54	1.1	0.91	1.02	269
Mepiquat chloride	70	1.3	0.03	0.04	13
Paraquat	12	1.1	0.33	0.38	22
Sodium chlorate	5	1.0	0.80	0.80	19
Thidiazuron	3	1.0	0.05	0.05	1
Tribufos	58	1.1	0.73	0.78	220

1/ Planted acres in 1997 for Tennessee were 490,000 acres.

Upland Cotton: Agricultural Chemical Applications, Texas, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Clethodim	3	1.0	0.13	0.13	19
Diuron	12	1.0	0.39	0.39	251
Fluazifop-P-butyl	3	1.0	0.10	0.10	14
Fluometuron	10	1.1	0.61	0.67	384
Glyphosate	8	1.1	0.61	0.68	308
MSMA	5	1.0	1.14	1.14	282
Metolachlor	4	1.0	1.27	1.27	311
Norflurazon	8	1.0	0.45	0.45	205
Pendimethalin	22	1.1	0.61	0.66	806
Prometryn	23	1.0	0.42	0.42	528
Pyrithiobac-sodium	7	1.0	0.04	0.04	15
Trifluralin	74	1.1	0.66	0.76	3,074
Insecticides:					
Acephate	3	1.4	0.38	0.52	92
Aldicarb	13	1.0	0.40	0.40	275
Azinphos-methyl	6	1.9	0.24	0.45	154
Bt (Bacillus thur.)2/	4	1.5			
Carbofuran	6	1.0	0.26	0.26	86
Cyfluthrin	7	1.3	0.03	0.04	18
Cypermethrin	6	1.0	0.06	0.06	20
Dicrotophos	6	1.3	0.12	0.15	54
Dimethoate	1	1.1	0.35	0.39	11
Endosulfan	2	1.9	0.49	0.93	103
Lambdacyhalothrin	7	1.3	0.03	0.03	12
Malathion	19	5.2	0.89	4.66	4,807
Methyl parathion	5	1.7	0.33	0.55	143
Oxamyl	18	1.6	0.18	0.30	297
Phorate	6	1.0	0.46	0.47	164
Zeta-cypermethrin	3	1.0	0.04	0.04	6
Other Chemicals:					
Endothall	2	1.0	0.03	0.03	4
Ethephon	17	1.0	0.85	0.87	818
Mepiquat chloride	10	1.5	0.01	0.02	11
Paraquat	31	1.1	0.23	0.25	424
Sodium chlorate	7	1.0	1.33	1.35	482
Thidiazuron	12	1.1	0.17	0.20	132
Tribufos	17	1.0	0.57	0.57	517

1/ Planted acres in 1997 for Texas were 5.50 million acres.
2/ Rates and total applied are not available because amounts of active ingredient are not comparable between products.

Fall Season Potatoes

Seven major fall producing States were included in the 1997 survey.

Nitrogen fertilizer was applied to nearly all of the potato acres in the States surveyed. The number of applications averaged 3.2 times across the field with a total of 223 million pounds applied. Per acre rates averaged 237 pounds for the year.

Phosphate was applied to 98 percent of the acres in the surveyed States, and a total of 166 million pounds was applied. The number of applications averaged 1.7 times per year for an average of 180 pounds per acre for the year.

Potash was applied to 91 percent of the land. The percent of acres treated varied most for this fertilizer. The coverage ranged from 100 percent in Maine and Wisconsin to 80 percent in North Dakota. About 134 million pounds were applied in total. Per acre application averaged 156 pounds in 1.6 trips across the field.

Herbicides were applied to 83 percent of the potato acreage in 1997. Coverage ranged from 98 percent in Wisconsin to 28 percent of the crop receiving herbicides in Minnesota. Metribuzin was the most widely applied active ingredient and was used on 67 percent of the total acreage. EPTC was applied to 31 percent of the acres, and Pendimethalin was applied to 27 percent.

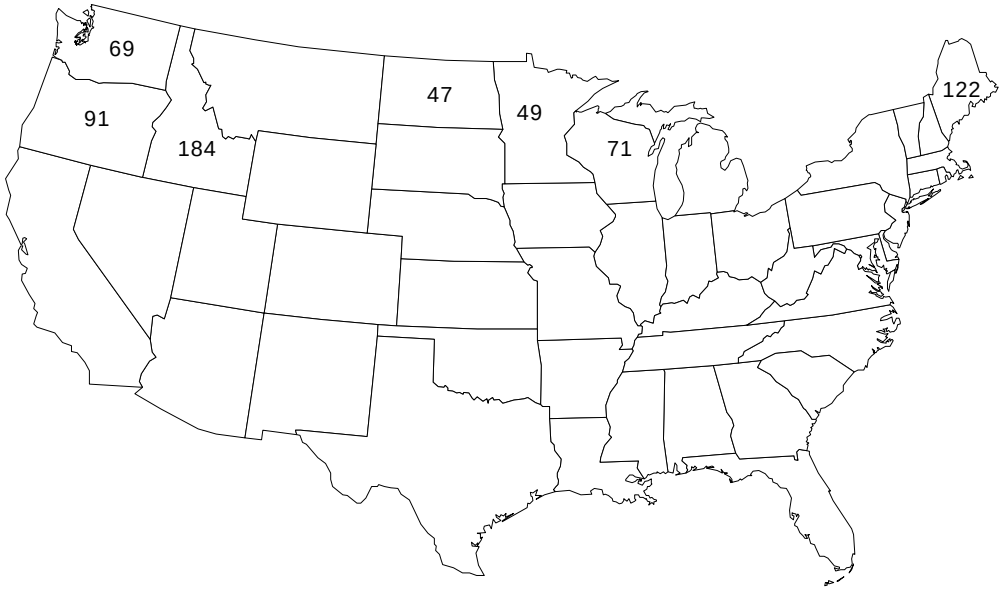
Insecticides were applied to 92 percent of the acreage. Usage ranged from treatment on 99 percent of the acres in Washington and Minnesota to 77 percent of the acres in North Dakota. The three most common active ingredients used were Methamidophos, Carbofuran, and Phorate, which were applied to 36, 23, and 23 percent of the potato land, respectively.

Fungicide treatments were applied to 98 percent of acreage in the seven States' fall potato crop acreage. Idaho and Wisconsin treated all their acreage, and all seven States had fungicide treatment on 93 percent or more of their acreage. Chlorothalonil was used the most, as it was applied on 88 percent of the land, followed by Mancozeb on 64 percent of the land. Triphenyltin hydroxide, Cymoxanil, Metalaxyl, and Copper hydroxide were used on percentages of the potato land ranging from 31 percent down to 21 percent.

Usage of other chemicals, primarily desiccants, varied widely among States, being used on an average of 65 percent of the land. These chemicals were used on 96 percent of the Maine acreage, but only 36 percent of North Dakota's acreage was treated. Diquat was the most commonly used active ingredient in five of the States and was applied to 38 percent of the planted area.

The U.S. map that follows shows the number of usable reports, by State, in the 1997 survey. These 7 States accounted for 79 percent of U.S. fall potato acreage covering 943,500 acres.

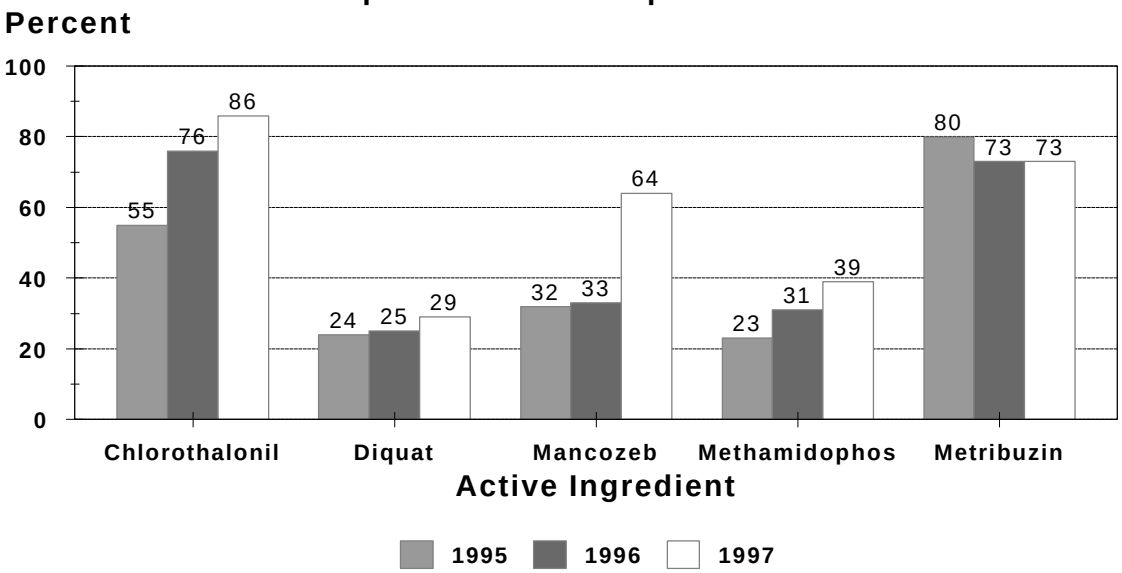
Fall Potatoes: Number of Usable Reports, 1997



Fall Potatoes - Percent of Acres Treated

Top 5 Active Ingredients for 1997

Comparison to 3 Comparable States



Comparable states are ID, ME and WA.

Fall Potatoes: Fertilizer Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied					
		Nitrogen		Phosphate		Potash	
	1,000 Acres	Percent	Mil. Lbs	Percent	Mil. Lbs	Percent	Mil. Lbs
ID	390	100	103.6	97	72.3	88	41.7
ME	71	100	12.9	100	13.3	100	13.5
MN	77	96	11.9	99	6.1	97	6.6
ND	125	100	16.7	96	11.7	80	7.7
OR	54.5	100	15.1	100	10.8	87	11.1
WA	148	100	47.9	99	42.6	98	31.6
WI	78	100	15.0	100	9.5	100	22.2
Total	943.5	100	223.1	98	166.3	91	134.4

Fall Potatoes: Fertilizer Primary Nutrient Applications,
States Surveyed and Total, 1997

Primary Nutrient	Planted Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Idaho:	390					
Nitrogen		100	4.0	66	266	103.6
Phosphate		97	2.1	91	191	72.3
Potash		88	1.8	69	121	41.7
Maine:	71					
Nitrogen		100	1.2	152	182	12.9
Phosphate		100	1.0	186	187	13.3
Potash		100	1.0	185	190	13.5
Minnesota:	77					
Nitrogen		96	1.3	125	161	11.9
Phosphate		99	1.0	76	80	6.1
Potash		97	1.1	80	88	6.6
North Dakota:	125					
Nitrogen		100	3.3	40	134	16.7
Phosphate		96	1.4	72	98	11.7
Potash		80	1.3	61	77	7.7
Oregon:	54.5					
Nitrogen		100	2.5	111	275	15.1
Phosphate		100	1.7	119	198	10.8
Potash		87	1.5	152	233	11.1
Washington:	148					
Nitrogen		100	2.5	131	324	47.9
Phosphate		99	1.7	168	289	42.6
Potash		98	1.2	180	217	31.6
Wisconsin:	78					
Nitrogen		100	4.0	48	192	15.0
Phosphate		100	1.6	79	122	9.5
Potash		100	2.9	100	286	22.2
Total:	943.5					
Nitrogen		100	3.2	75	237	223.1
Phosphate		98	1.7	106	180	166.3
Potash		91	1.6	99	156	134.4

Fall Potatoes: Active Ingredients Applied and Publication Status
By States Surveyed, 1997

Active Ingredient	All	States Surveyed						
		ID	ME	MN	ND	OR	WA	WI
Herbicides								
EPTC	P	P	*	*		P	P	
Glyphosate	P	P			*		*	P
Linuron	P		P	P		*		P
MCPA	*			*				
Metolachlor	P	P	*	P	*	P	*	P
Metribuzin	P	P	P	P	P	P	P	P
Pendimethalin	P	P	*	P	P	P	P	P
Rimsulfuron	P	P	*	*	*	*	*	*
Sethoxydim	P	*	*	*	*	*		*
Trifluralin	P	P		*	*	P	P	
Insecticides								
Aldicarb	P	P				P	P	
Azinphos-methyl	P	*	P	P	P	*	*	*
Bt (Bacillus thur.)	*		*					
Carbaryl	P	P	P	*		*	*	*
Carbofuran	P	P		P	P	P	P	
Chlorpyrifos	*			*				
Diazinon	*	*		*		*	*	
Dimethoate	P	*		*	*	*	P	P
Disulfoton	P	P	*			*		
Endosulfan	P	P	*	P	P	*		P
Esfenvalerate	P	*	*	*	*	*	P	P
Ethoprop	P	P	*			P	*	*
Ethyl parathion	*				*	*		
Fenvalerate	*	*						*
Fonofos	P	P				*	*	
Imidacloprid	P	P	P	P	*	P	*	P
Malathion	*					*		
Methamidophos	P	P	P	*	P	P	P	P
Methyl parathion	*				*			
Oxamyl	*					*		
Permethrin	P	P	*	*		P	P	*
Phorate	P	P	*	*	P	P	P	
Phosmet	*					*	*	*
Piperonyl butoxide	P							P
Propargite	P	*				P	P	
Pyrethrins	*						*	*
Rotenone	*						*	

--continued

Fall Potatoes: Active Ingredients Applied and Publication Status
By States Surveyed, 1997 (continued)

Active Ingredient	All	States Surveyed ID	ME	MN	ND	OR	WA	WI
Fungicides								
Basic copper sulfate	*	*						*
Captan	*						*	
Chlorothalonil	P	P	P	P	P	P	P	P
Copper ammonium	P	P					*	*
Copper hydroxide	P	P	P	*	*	P	P	P
Copper resinate	P		*					P
Copper sulfate	P	P						P
Cymoxanil	P	P	*	*	P	P	P	P
Dicloran	*					*	*	
Dimethomorph	P	P					*	*
Iprodione	P	P				P	P	
Mancozeb	P	P	P	P	P	P	P	P
Maneb	P	P	P	*	*	*	P	P
Metalaxyl	P	P	P	P	P	P	P	*
Metiram	P	*	P	*	*	*	P	*
Propamocarb hydroch.	P	P		*			*	*
Sulfur	P	*				P	P	*
Thiophanate-methyl	*					*		
Triphenyltin hydrox.	P	P	P	P	*	P	P	P
Other Chemicals								
2,4-D	*	*		*	*			
Chloropicrin	*	*					*	
Dichloropropene	P	P				P	P	
Diquat	P	P	P	P	P	P	P	P
Endothall	P		*		*		*	*
Maleic hydrazide	P	*	P		*	P	*	
Metam-sodium	P	P				P	P	*
Monocarbamide dihyd.	*					*	*	
Paraquat	P	*				*	P	*
Sodium chlorate	*			*				
Sulfuric acid	P	P	P	*		*		P

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Fall Potatoes: Pesticide Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied								
		Herbicide		Insecticide 1/		Fungicide		Other Chemical		
	1,000 Acres	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs	
ID	390	92	962	92	1,057	100	2,233	59	40,356	
ME	71	96	39	97	68	99	641	96	1,609	
MN	77	28	35	99	84	98	816	82	113	
ND	125	63	134	77	161	99	1,232	36	22	
OR	54.5	94	142	85	178	93	346	69	8,306	
WA	148	85	264	99	644	95	1,084	71	9,658	
WI	78	98	70	95	95	100	1,103	87	3,601	
Total	943.5	83	1,646	92	2,287	98	7,455	65	63,665	

1/ Total Applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.

Fall Potatoes: Agricultural Chemical Applications,
States Surveyed, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
EPTC	31	1.0	3.18	3.28	971
Glyphosate	5	1.0	0.67	0.67	31
Linuron	2	1.0	0.81	0.81	16
Metolachlor	8	1.0	1.40	1.40	107
Metribuzin	67	1.0	0.44	0.46	294
Pendimethalin	27	1.0	0.80	0.80	200
Rimsulfuron	13	1.0	0.02	0.02	3
Sethoxydim	1	1.1	0.23	0.25	1
Trifluralin	5	1.0	0.47	0.47	23
Insecticides:					
Aldicarb	10	1.0	2.79	2.79	255
Azinphos-methyl	8	1.1	0.48	0.52	39
Carbaryl	3	1.1	0.95	1.06	31
Carbofuran	23	1.1	0.86	0.93	198
Dimethoate	11	1.7	0.43	0.74	78
Disulfoton	2	1.0	2.44	2.44	52
Endosulfan	14	1.4	0.70	0.96	124
Esfenvalerate	11	1.2	0.04	0.04	4
Ethoprop	5	1.0	4.82	4.86	222
Fonofos	4	1.0	2.94	2.94	123
Imidacloprid	17	1.2	0.14	0.16	26
Methamidophos	36	1.5	0.81	1.20	410
Permethrin	4	1.3	0.09	0.12	5
Phorate	23	1.0	2.62	2.66	584
Piperonyl butoxide	2	1.2	0.33	0.38	7
Propargite	5	1.1	1.73	1.92	88
Fungicides:					
Chlorothalonil	88	4.7	0.90	4.24	3,516
Copper ammonium	1	2.1	0.17	0.37	5
Copper hydroxide	21	1.8	0.59	1.06	209
Copper resinate	1	2.0	0.09	0.18	2
Copper sulfate	2	2.2	0.47	1.03	20
Cymoxanil	27	2.0	0.12	0.24	62
Dimethomorph	2	2.0	0.18	0.38	8
Iprodione	8	1.0	0.96	0.98	75
Mancozeb	64	2.9	1.31	3.80	2,305
Maneb	15	3.2	1.05	3.34	487
Metalaxyl	24	1.4	0.19	0.26	60
Metiram	9	2.2	1.47	3.25	276
Propamocarb hydroch.	4	1.2	0.87	1.05	36
Sulfur	4	3.5	1.99	6.94	258
Triphenyltin hydrox.	31	2.2	0.13	0.28	83
Other Chemicals:					
Dichloropropene	5	1.0	164.48	164.48	8,073
Diquat	38	1.4	0.30	0.41	149
Endothall	2	1.3	0.35	0.46	7
Maleic hydrazide	3	1.0	1.34	1.34	35
Metam-sodium	18	1.0	118.63	118.63	20,249
Paraquat	2	1.3	0.47	0.62	12
Sulfuric acid	14	1.0	255.34	267.58	34,559

1/ Planted acres in 1997 for the 7 states surveyed were 943,500 acres.
States included are ID, ME, MN, ND, OR, WA, and WI.

Fall Potatoes: Agricultural Chemical Applications,
Idaho, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
EPTC	50	1.0	3.46	3.57	693
Glyphosate	3	1.0	0.53	0.53	6
Metolachlor	9	1.0	1.29	1.29	44
Metribuzin	75	1.0	0.44	0.45	132
Pendimethalin	30	1.0	0.65	0.65	76
Rimsulfuron	16	1.0	0.02	0.02	1
Trifluralin	6	1.0	0.44	0.45	10
Insecticides:					
Aldicarb	11	1.0	2.62	2.62	110
Carbaryl	5	1.0	0.98	1.02	22
Carbofuran	17	1.0	1.06	1.06	71
Disulfoton	4	1.0	3.06	3.06	42
Endosulfan	13	1.7	0.86	1.47	75
Ethoprop	5	1.0	4.49	4.49	94
Fonofos	7	1.0	2.58	2.58	74
Imidacloprid	8	1.0	0.20	0.21	7
Methamidophos	26	1.3	0.95	1.25	126
Permethrin	4	1.1	0.06	0.07	1
Phorate	41	1.0	2.64	2.69	432
Fungicides:					
Chlorothalonil	85	3.1	0.92	2.89	954
Copper ammonium	3	1.7	0.16	0.26	3
Copper hydroxide	24	1.4	0.78	1.12	104
Copper sulfate	3	1.9	0.52	0.99	13
Cymoxanil	39	1.7	0.12	0.20	31
Dimethomorph	3	1.3	0.19	0.25	3
Iprodione	2	1.0	0.93	0.93	8
Mancozeb	79	2.6	1.18	3.05	943
Maneb	16	1.4	1.05	1.46	89
Metalaxyl	21	1.3	0.19	0.24	20
Propamocarb hydroch.	7	1.0	0.90	0.91	24
Triphenyltin hydrox.	33	1.8	0.10	0.18	24
Other Chemicals:					
Dichloropropene	2	1.0	139.52	139.52	951
Diquat	16	1.2	0.35	0.43	27
Metam-sodium	20	1.0	121.92	121.92	9,586
Sulfuric acid	28	1.0	274.89	277.12	29,749

1/ Planted acres in 1997 for Idaho were 390,000 acres.

Fall Potatoes: Agricultural Chemical Applications,
Maine, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Linuron	14	1.0	0.67	0.67	6
Metribuzin	79	1.0	0.49	0.50	28
Insecticides:					
Azinphos-methyl	3	1.2	0.39	0.46	1
Carbaryl	3	1.5	0.77	1.14	3
Imidacloprid	77	1.2	0.08	0.09	5
Methamidophos	30	1.8	0.59	1.06	22
Fungicides:					
Chlorothalonil	86	8.7	0.76	6.58	400
Copper hydroxide	22	1.7	0.40	0.69	11
Mancozeb	35	4.7	0.99	4.67	116
Maneb	22	5.5	1.08	5.88	92
Metalaxyl	20	2.0	0.15	0.30	4
Metiram	3	7.0	0.94	6.53	16
Triphenyltin hydrox.	13	2.0	0.09	0.18	2
Other Chemicals:					
Diquat	95	2.0	0.26	0.52	35
Maleic hydrazide	6	1.0	1.11	1.11	5
Sulfuric acid	8	1.0	282.93	282.93	1,568

1/ Planted acres in 1997 for Maine were 71,000 acres.

Fall Potatoes: Agricultural Chemical Applications, Minnesota, 1997 1/

Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Linuron	7	1.0	1.22	1.22	6
Metolachlor	8	1.0	1.93	1.93	11
Metribuzin	14	1.2	0.66	0.76	8
Pendimethalin	9	1.0	0.83	0.83	6
Insecticides:					
Azinphos-methyl	67	1.1	0.47	0.51	26
Carbofuran	8	1.2	0.66	0.81	5
Endosulfan	66	1.1	0.43	0.46	24
Imidacloprid	20	1.1	0.12	0.13	2
Fungicides:					
Chlorothalonil	87	4.2	0.99	4.19	281
Mancozeb	80	4.0	1.86	7.45	459
Metalaxyl	9	1.0	0.25	0.25	2
Triphenyltin hydrox.	63	1.3	0.30	0.38	18
Other Chemicals:					
Diquat	82	1.1	0.27	0.30	19

1/ Planted acres in 1997 for Minnesota were 77,000 acres.

Fall Potatoes: Agricultural Chemical Applications, North Dakota, 1997 1/

Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Metribuzin	53	1.0	0.43	0.43	28
Pendimethalin	43	1.0	1.22	1.22	66
Insecticides:					
Azinphos-methyl	11	1.0	0.49	0.49	7
Carbofuran	45	1.2	0.48	0.56	31
Endosulfan	13	1.3	0.68	0.88	14
Methamidophos	10	3.2	0.66	2.08	26
Phorate	21	1.0	2.38	2.38	64
Fungicides:					
Chlorothalonil	92	8.9	0.83	7.42	858
Cymoxanil	13	1.5	0.11	0.17	3
Mancozeb	49	2.3	1.41	3.29	203
Metalaxyl	41	1.0	0.20	0.20	10
Other Chemicals:					
Diquat	34	1.5	0.29	0.45	19

1/ Planted acres in 1997 for North Dakota were 125,000 acres.

Fall Potatoes: Agricultural Chemical Applications, Oregon, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
EPTC	54	1.0	3.28	3.28	97
Metolachlor	15	1.0	1.68	1.68	14
Metribuzin	73	1.1	0.36	0.38	15
Pendimethalin	30	1.0	0.85	0.85	14
Trifluralin	3	1.0	0.52	0.52	1
Insecticides:					
Aldicarb	14	1.0	2.89	2.89	23
Carbofuran	48	1.1	0.62	0.68	18
Ethoprop	9	1.1	4.26	4.59	23
Imidacloprid	14	1.0	0.27	0.27	2
Methamidophos	53	1.8	0.80	1.43	41
Permethrin	17	1.7	0.13	0.22	2
Phorate	19	1.0	2.45	2.45	26
Propargite	13	1.5	1.66	2.49	18
Fungicides:					
Chlorothalonil	89	2.1	1.05	2.22	108
Copper hydroxide	21	1.8	0.48	0.88	10
Cymoxanil	19	1.1	0.11	0.12	1
Iprodione	26	1.1	0.96	1.10	15
Mancozeb	81	2.3	1.37	3.17	140
Metalaxyl	34	1.5	0.19	0.28	5
Sulfur	9	2.0	2.11	4.19	21
Triphenyltin hydrox.	16	2.0	0.11	0.23	2
Other Chemicals:					
Dichloropropene	50	1.0	170.53	170.53	4,606
Diquat	44	1.0	0.39	0.39	10
Maleic hydrazide	6	1.0	1.81	1.81	6
Metam-sodium	47	1.0	127.03	127.03	3,268

1/ Planted acres in 1997 for Oregon were 54,500 acres.

Fall Potatoes: Agricultural Chemical Applications, Washington, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
EPTC	48	1.0	2.38	2.48	175
Metribuzin	66	1.1	0.46	0.50	49
Pendimethalin	23	1.0	0.66	0.66	23
Trifluralin	14	1.0	0.47	0.47	10
Insecticides:					
Aldicarb	28	1.0	2.95	2.95	122
Carbofuran	39	1.1	1.15	1.27	73
Dimethoate	22	2.3	0.47	1.07	35
Esfenvalerate	14	1.2	0.04	0.05	1
Methamidophos	78	1.6	0.83	1.34	155
Permethrin	7	1.2	0.09	0.12	1
Phorate	14	1.0	2.87	2.87	61
Propargite	26	1.0	1.75	1.82	69
Fungicides:					
Chlorothalonil	89	2.4	1.04	2.47	325
Copper hydroxide	18	1.3	0.58	0.76	21
Cymoxanil	7	1.0	0.12	0.12	1
Iprodione	37	1.0	0.96	0.96	52
Mancozeb	36	2.3	1.26	2.93	158
Maneb	18	3.9	0.85	3.30	89
Metalaxyl	29	1.7	0.21	0.35	15
Metiram	38	2.1	1.55	3.31	187
Sulfur	15	2.5	3.31	8.23	189
Triphenyltin hydrox.	24	3.3	0.12	0.40	14
Other Chemicals:					
Dichloropropene	10	1.0	167.36	167.36	2,516
Diquat	30	1.0	0.29	0.30	13
Metam-sodium	40	1.0	110.19	110.19	6,597
Paraquat	8	1.1	0.41	0.47	6

1/ Planted acres in 1997 for Washington were 148,000 acres.

Fall Potatoes: Agricultural Chemical Applications, Wisconsin, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Glyphosate	10	1.0	1.16	1.16	9
Linuron	7	1.0	0.66	0.66	3
Metolachlor	6	1.0	1.36	1.36	7
Metribuzin	93	1.0	0.45	0.47	34
Pendimethalin	29	1.0	0.72	0.72	16
Insecticides:					
Dimethoate	59	1.6	0.39	0.64	30
Endosulfan	13	1.3	0.79	1.05	10
Esfenvalerate	59	1.2	0.04	0.05	2
Imidacloprid	47	1.1	0.21	0.22	8
Methamidophos	22	1.0	1.00	1.00	17
Piperonyl butoxide	23	1.2	0.33	0.38	7
Fungicides:					
Chlorothalonil	97	7.9	0.98	7.80	591
Copper hydroxide	41	3.8	0.44	1.65	52
Copper resinate	13	1.9	0.10	0.20	2
Copper sulfate	9	2.7	0.41	1.09	8
Cymoxanil	23	2.1	0.12	0.25	5
Mancozeb	67	4.4	1.26	5.52	287
Maneb	21	3.7	1.05	3.86	62
Triphenyltin hydrox.	47	2.2	0.10	0.23	8
Other Chemicals:					
Diquat	72	1.5	0.31	0.46	26
Sulfuric acid	18	1.4	142.00	195.27	2,770

1/ Planted acres in 1997 for Wisconsin were 78,000 acres.

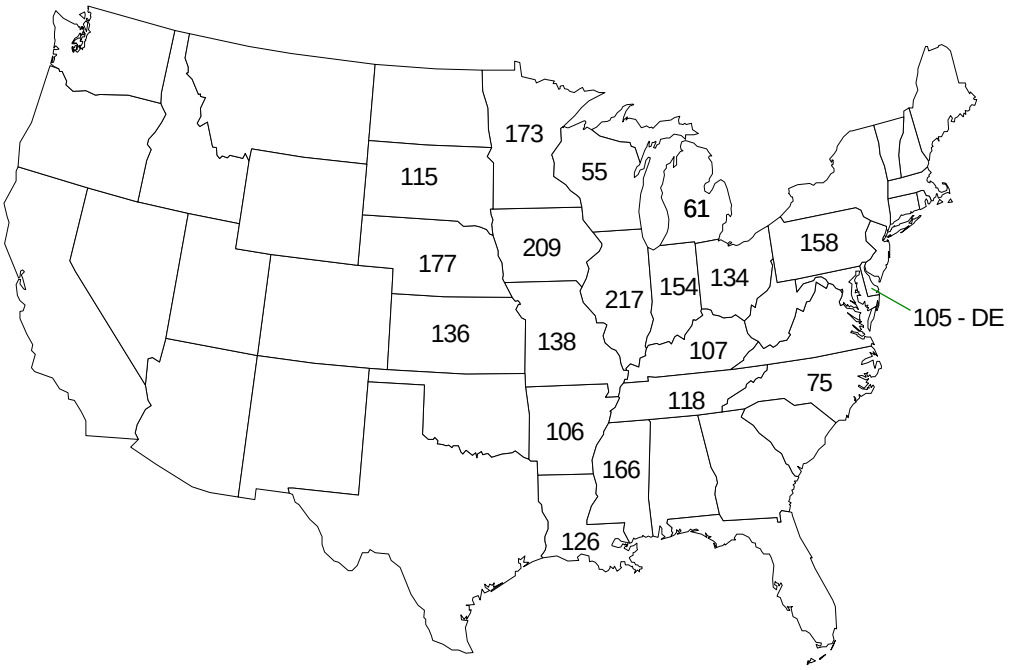
Soybeans

Soybean producers in the nineteen States surveyed applied nitrogen fertilizer to 20 percent of the area planted to soybeans. The percent of acres treated ranged from 6 percent in Arkansas to 63 percent in Michigan. The average number of nitrogen applications per acre was 1.1, with an average application rate of 23 pounds per acre. Phosphate was applied on 28 percent of the soybean planted acreage in the surveyed States. Producers in North Carolina applied phosphate to 67 percent of the soybean acreage, while Kansas applications covered only 18 percent of the planted acreage. Potash was applied to 33 percent of the planted soybean acreage.

An average of 97 percent of the soybean acreage was treated with herbicides in the nineteen States surveyed. The most widely used herbicides were Imazethapyr, applied to 38 percent of the soybean acres, followed by glyphosate and Pendimethalin applied to 28 and 25 percent of the acreage, respectively. Growers in the surveyed States applied insecticide to only 2 percent of the total soybean acres planted. With the exception of insecticide applications in Louisiana and North Carolina, there were too few reports to publish individual state data for the insecticides. Growers reported few fungicide or other chemical applications.

The U.S. map shows the number of usable reports by States included in the 1997 survey. The surveyed States represent 66.2 million acres of soybeans which was 93 percent of the soybeans planted in the U.S. in 1997. The bar chart shows the 5 most commonly applied active ingredients in 1997 with comparisons for the previous two years.

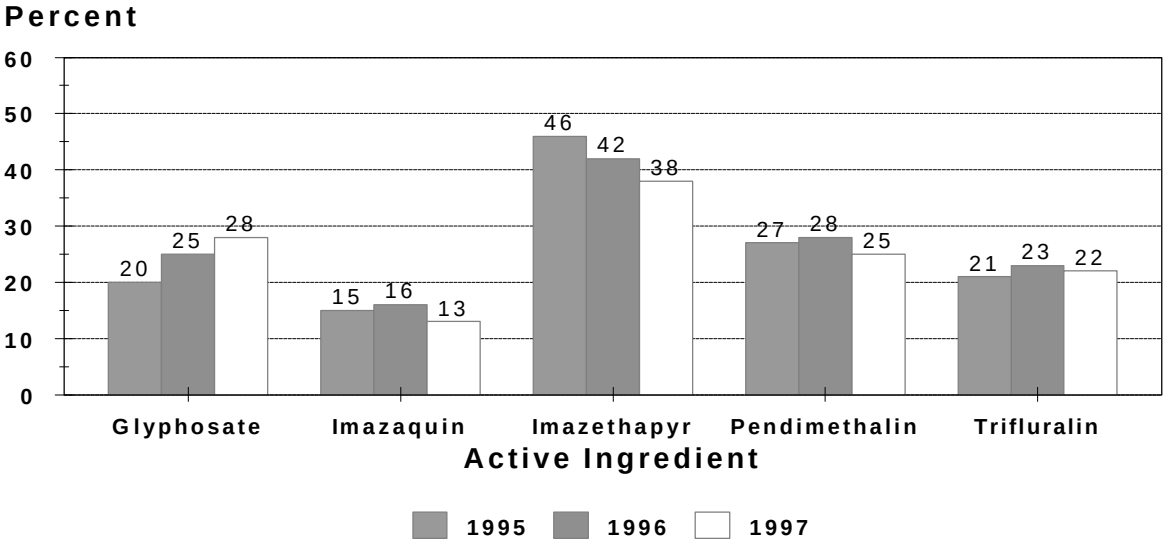
Soybeans: Number of Usable Reports, 1997



Soybeans - Percent of Acres Treated

Top 5 Active Ingredients for 1997

Comparison to 11 Comparable States



Comparable states are AR, IL, IN, IA, LA, MN, MS, MO, NE, OH and TN

Soybeans: Fertilizer Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied					
		Nitrogen		Phosphate		Potash	
	1,000 Acres	Percent	Mil. Lbs	Percent	Mil. Lbs	Percent	Mil. Lbs
AR	3,600	6	9.3	29	60.8	30	71.4
DE	225	37	1.5	38	3.8	29	5.7
IL	10,000	11	12.6	23	160.3	34	352.5
IN	5,450	16	40.8	22	65.2	36	213.0
IA	10,500	16	30.4	23	129.3	25	205.4
KS	2,450	20	12.1	18	14.8	15	18.9
KY	1,300	32	22.7	42	36.9	41	59.4
LA	1,400	13	5.8	23	13.8	23	21.3
MI	1,900	63	21.3	49	49.9	71	100.9
MN	6,800	16	15.2	20	55.6	22	141.5
MS	2,100	16	5.4	23	25.5	26	48.4
MO	4,900	15	17.2	28	60.4	35	136.2
NE	3,500	31	19.5	31	45.9	16	11.3
NC	1,400	52	46.7	67	36.8	77	103.3
OH	4,500	16	11.9	26	56.8	60	308.4
PA	370	53	3.4	55	8.7	59	19.5
SD	3,500	35	43.3	34	42.2	18	14.5
TN	1,320	29	7.4	48	33.1	52	52.6
WI	1,000	53	8.2	54	11.7	69	56.0
Total	66,215	20	334.7	28	911.5	33	1,940.2

Soybeans: Fertilizer Primary Nutrient Applications, States Surveyed and Total, 1997

Primary Nutrient	Planted Acreage	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Arkansas:	3,600					
Nitrogen		6	1.2	38	47	9.3
Phosphate		29	1.1	53	58	60.8
Potash		30	1.1	60	66	71.4
Delaware:	225					
Nitrogen		37	1.0	18	19	1.5
Phosphate		38	1.0	44	45	3.8
Potash		29	1.0	85	86	5.7
Illinois:	10,000					
Nitrogen		11	1.0	11	11	12.6
Phosphate		23	1.0	71	71	160.3
Potash		34	1.0	103	103	352.5
Indiana:	5,450					
Nitrogen		16	1.2	39	48	40.8
Phosphate		22	1.0	52	54	65.2
Potash		36	1.1	100	108	213.0
Iowa:	10,500					
Nitrogen		16	1.0	18	18	30.4
Phosphate		23	1.0	53	53	129.3
Potash		25	1.0	76	80	205.4
Kansas:	2,450					
Nitrogen		20	1.1	22	24	12.1
Phosphate		18	1.0	33	33	14.8
Potash		15	1.1	48	53	18.9
Kentucky:	1,300					
Nitrogen		32	1.1	50	55	22.7
Phosphate		42	1.0	68	68	36.9
Potash		41	1.0	112	112	59.4
Louisiana:	1,400					
Nitrogen		13	1.1	29	31	5.8
Phosphate		23	1.0	43	43	13.8
Potash		23	1.0	63	65	21.3
Michigan:	1,900					
Nitrogen		63	1.0	18	18	21.3
Phosphate		49	1.0	54	54	49.9
Potash		71	1.1	71	75	100.9
Minnesota:	6,800					
Nitrogen		16	1.0	14	14	15.2
Phosphate		20	1.0	41	41	55.6
Potash		22	1.0	93	93	141.5

--continued

Soybeans: Fertilizer Primary Nutrient Applications,
States Surveyed and Total, 1997 (continued)

Primary Nutrient	Planted Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Mississippi:	2,100					
Nitrogen		16	1.0	16	16	5.4
Phosphate		23	1.0	53	53	25.5
Potash		26	1.0	88	88	48.4
Missouri:	4,900					
Nitrogen		15	1.0	24	24	17.2
Phosphate		28	1.0	44	44	60.4
Potash		35	1.1	72	80	136.2
Nebraska:	3,500					
Nitrogen		31	1.1	16	18	19.5
Phosphate		31	1.0	40	42	45.9
Potash		16	1.0	20	21	11.3
North Carolina:	1,400					
Nitrogen		52	1.4	45	64	46.7
Phosphate		67	1.0	39	39	36.8
Potash		77	1.1	86	95	103.3
Ohio:	4,500					
Nitrogen		16	1.0	15	16	11.9
Phosphate		26	1.0	49	49	56.8
Potash		60	1.0	113	114	308.4
Pennsylvania:	370					
Nitrogen		53	1.3	14	17	3.4
Phosphate		55	1.3	34	43	8.7
Potash		59	1.2	71	89	19.5
South Dakota:	3,500					
Nitrogen		35	1.2	29	36	43.3
Phosphate		34	1.0	36	36	42.2
Potash		18	1.0	23	23	14.5
Tennessee:	1,320					
Nitrogen		29	1.0	19	19	7.4
Phosphate		48	1.0	51	52	33.1
Potash		52	1.0	74	77	52.6
Wisconsin:	1,000					
Nitrogen		53	1.1	14	16	8.2
Phosphate		54	1.0	22	22	11.7
Potash		69	1.0	82	82	56.0
Total:	66,215					
Nitrogen		20	1.1	23	25	334.7
Phosphate		28	1.0	49	50	911.5
Potash		33	1.0	85	88	1,940.2

Soybeans: Active Ingredients Applied and Publication Status
By States Surveyed, 1997

Active Ingredient	All	States Surveyed							
		AR	DE	IL	IN	IA	KS	KY	LA	MI
Herbicides										
2,4-D	P	*	P	P	P	P	P	*	*	*
2,4-DB	P	*	*	*	*	*		*	*	
Acifluorfen	P	P	P	P	P	P	P	P	P	P
Alachlor	P	*	P	*	*	P	P	*	*	*
Atrazine	*									
Bentazon	P	P	*	P	*	P	P	P	P	*
Chlorimuron-ethyl	P	P	P	P	P	P	P	P	P	P
Clethodim	P	P	*	P	*	P	*	*	P	
Clomazone	P	*	P	P	P	P	*		P	*
Clopyralid	*									
Dimethenamid	P	*	*	*						
Diuron	*							*		
Ethalfluralin	P									
Fenoxaprop	P		*	P	P	P	*	P	*	*
Fluazifop-P-butyl	P	P	*	P	P	P	*	P	P	*
Flumetsulam	P	P	*	P	P	P	*	*	*	P
Flumiclorac Pentyl	P			P		P	P	*		
Fomesafen	P	P	P	P	P	P	*	P	P	*
Glyphosate	P	P	P	P	P	P	P	P	P	P
Imazaquin	P	P	P	P	P	P	P	P	P	P
Imazethapyr	P		P	P	P	P	P	P		P
Lactofen	P	*		P	P	P	P	*		*
Linuron	P		P		*			*	*	P
Metolachlor	P	P	P	P	P	P	P	P	P	P
Metribuzin	P	P	P	P	P	P	P	P	P	P
Oxyfluorfen	*								*	
Paraquat	P	*	P	P	P			P	P	*
Pendimethalin	P	P	P	P	P	P	P	P	P	P
Quizalofop-ethyl	P	*		P	*	*	*	*	P	P
Sethoxydim	P	P	*	P	P	P	*	P	P	
Sulfosate	P		*	*	*			*		
Thifensulfuron	P		*	P	P	P	*	*		P
Tribenuron-methyl	*		*							
Trifluralin	P	P	P	P	*	P	P	P	P	*
Vernolate	*									
Insecticides										
Acephate	*									
Bt (Bacillus thur.)	*									
Carbaryl	*									
Carbofuran	*								*	
Chlorpyrifos	*			*			*		*	
Diflubenzuron	*								*	
Dimethoate	*		*	*						
Esfenvalerate	*								*	
Lambdacyhalothrin	P		*				*		P	
Malathion	*			*						
Methomyl	*	*							*	
Methyl parathion	P							*	P	
Permethrin	*		*							
Thiodicarb	P								P	
Fungicides										
Benomyl	*								*	
Other Chemicals										
Sodium chlorate	*									

--continued

Soybeans: Active Ingredients Applied and Publication Status
By States Surveyed, 1997 (continued)

Active Ingredient	States Surveyed									
	MN	MS	MO	NE	NC	OH	PA	SD	TN	WI
Herbicides										
2,4-D	P	*	P	*		P	*	P	*	*
2,4-DB		*	*		*				*	
Acifluorfen	P	P	P	P	P	*		P	P	*
Alachlor	P	*	*	P	*	P	P			*
Atrazine				*						
Bentazon	P	P	P	P	P	P		P	P	*
Chlorimuron-ethyl	*	P	P	P	P	P	P	P	P	*
Clethodim	*	P	P	P		P	*	P	P	*
Clomazone	P	P	*	P	*	P		*	P	*
Clopyralid				*						
Dimethenamid		P		*	P	*			*	*
Diuron										
Ethalfluralin	*			*						
Fenoxaprop	P	*	P	P		P		P	P	*
Fluazifop-P-butyl	P	P	P	P	P	P		P	P	*
Flumetsulam	P	P	*	P	P	P	P	*	P	P
Flumiclorac Pentyl	*		*	*		*		*		*
Fomesafen	*	P	P	*	P	P	*	*	P	*
Glyphosate	P	P	P	P	P	P	P	P	P	P
Imazaquin	*	P	P	P	P	P	P	*	P	
Imazethapyr	P		P	P	*	P	P	P	*	P
Lactofen	P	*	P	*	*	P		P	*	*
Linuron	*			*		P	P			P
Metolachlor	P	P	*	P	P	P	P	*	P	P
Metribuzin	P	P	P	P	P	P	P	*	P	*
Oxyfluorfen										
Paraquat		P	*		P	*	P		P	
Pendimethalin	P	P	P	P	P	P	P	P	P	P
Quizalofop-ethyl	P	*	P	P	*	P	P	P		*
Sethoxydim	P	P	P	P	*	P	*	P	P	*
Sulfosate								*		
Thifensulfuron	P		P	P	*	P	*	P		P
Tribenuron-methyl			*							
Trifluralin	P	P	P	P	*	*		P	P	*
Vernolate					*					
Insecticides										
Acephate					*					
Bt (Bacillus thur.)		*								
Carbaryl				*	*			*		
Carbofuran										
Chlorpyrifos				*						
Diflubenzuron		*								
Dimethoate										
Esfenvalerate	*	*			*					
Lambdacyhalothrin					P				*	
Malathion										
Methomyl		*								
Methyl parathion	*	P		*		*				
Permethrin					*					
Thiodicarb		*			*					
Fungicides										
Benomyl										
Other Chemicals										
Sodium chlorate		*								

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Soybeans: Pesticide Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied							
		Herbicide		Insecticide 1/		Fungicide		Other Chemical	
	1,000 Acres	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs
AR 2/	3,600	97	5,019						
DE 2/	225	78	314						
IL 2/	10,000	98	11,136						
IN	5,450	99	7,062						
IA	10,500	99	13,691						
KS 2/	2,450	94	2,947						
KY 2/	1,300	91	1,460						
LA 2/	1,400	90	1,843	29	331				
MI	1,900	98	2,452						
MN 2/	6,800	96	6,902						
MS 2/	2,100	98	2,453						
MO	4,900	94	5,521						
NE 2/	3,500	99	4,093						
NC	1,400	98	1,625	35	130				
OH 2/	4,500	99	5,307						
PA	370	86	661						
SD 2/	3,500	90	3,059						
TN 2/	1,320	100	1,664						
WI	1,000	100	998						
Tot.2/	66,215	97	78,207	2	731				

1/ Total applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.
2/ Insufficient reports to publish data for one or more of the pesticide classes.

Soybeans: Agricultural Chemical Applications, States Surveyed, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	8	1.1	0.37	0.39	2,109
2,4-DB	1	1.0	0.09	0.09	54
Acifluorfen	12	1.0	0.20	0.21	1,690
Alachlor	3	1.0	2.36	2.36	4,500
Bentazon	11	1.0	0.63	0.65	4,737
Chlorimuron-ethyl	13	1.1	0.02	0.02	184
Clethodim	4	1.1	0.10	0.10	298
Clomazone	5	1.0	0.71	0.71	2,316
Dimethenamid	1	1.0	1.02	1.02	519
Ethalfluralin	*	1.0	0.79	0.79	64
Fenoxaprop	6	1.0	0.13	0.13	514
Fluazifop-P-butyl	7	1.0	0.06	0.06	307
Flumetsulam	4	1.0	0.05	0.05	120
Flumiclorac Pentyl	1	1.0	0.03	0.03	19
Fomesafen	6	1.0	0.20	0.21	861
Glyphosate	28	1.3	0.61	0.81	14,915
Imazaquin	13	1.1	0.08	0.09	751
Imazethapyr	38	1.0	0.05	0.05	1,237
Lactofen	4	1.0	0.10	0.10	277
Linuron	1	1.0	0.46	0.46	207
Metolachlor	7	1.1	1.76	1.87	8,907
Metribuzin	10	1.0	0.24	0.25	1,690
Paraquat	2	1.0	0.53	0.54	612
Pendimethalin	25	1.1	0.95	1.06	17,531
Quizalofop-ethyl	4	1.1	0.04	0.05	126
Sethoxydim	7	1.0	0.21	0.21	1,029
Sulfosate	1	1.0	0.75	0.75	323
Thifensulfuron	9	1.0	0.003	0.003	15
Trifluralin	21	1.0	0.87	0.88	12,270
Insecticides:					
Lambdacyhalothrin	*	1.0	0.02	0.02	5
Methyl parathion	1	1.4	0.50	0.71	293
Thiodicarb	*	1.0	0.36	0.37	111

* Applied on less than one percent of the acres.
1/ Planted acres in 1997 for the 19 states surveyed were 66.2 million acres. States included are AR, DE, IL, IN, IA, KS, KY, LA, MI, MN, MS, MO, NE, NC, OH, PA, SD, TN, and WI.

Soybeans: Agricultural Chemical Applications, Arkansas, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	37	1.2	0.24	0.28	375
Bentazon	27	1.1	0.48	0.52	514
Chlorimuron-ethyl	12	1.0	0.03	0.03	14
Clethodim	7	1.6	0.10	0.15	41
Fluazifop-P-butyl	6	1.0	0.09	0.09	19
Flumetsulam	3	1.0	0.05	0.05	5
Fomesafen	8	1.0	0.25	0.26	76
Glyphosate	49	1.6	0.62	1.01	1,782
Imazaquin	20	1.1	0.05	0.06	40
Metolachlor	12	1.0	1.66	1.66	734
Metribuzin	10	1.0	0.25	0.25	84
Pendimethalin	13	1.0	1.11	1.12	508
Sethoxydim	5	1.0	0.28	0.29	55
Trifluralin	16	1.0	0.94	0.95	533

1/ Planted acres in 1997 for Arkansas were 3.60 million acres.

Soybeans: Agricultural Chemical Applications, Delaware, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	5	1.0	0.21	0.21	2
Acifluorfen	4	1.0	0.33	0.33	3
Alachlor	5	1.0	1.85	1.85	22
Chlorimuron-ethyl	31	1.0	0.03	0.03	2
Clomazone	6	1.0	0.40	0.40	6
Fomesafen	2	1.0	0.37	0.37	1
Glyphosate	12	1.0	0.96	0.99	26
Imazaquin	14	1.0	0.10	0.10	3
Imazethapyr	8	1.0	0.04	0.04	1
Linuron	8	1.0	0.52	0.52	9
Metolachlor	37	1.2	1.82	2.11	175
Metribuzin	30	1.0	0.19	0.19	13
Paraquat	20	1.0	0.45	0.47	21
Pendimethalin	8	1.0	0.76	0.76	14
Trifluralin	7	1.0	0.62	0.62	10

1/ Planted acres in 1997 for Delaware were 225,000 acres.

Soybeans: Agricultural Chemical Applications, Illinois, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	9	1.0	0.40	0.40	350
Acifluorfen	10	1.0	0.13	0.13	139
Bentazon	13	1.0	0.72	0.74	931
Chlorimuron-ethyl	15	1.1	0.02	0.02	37
Clethodim	5	1.0	0.09	0.09	47
Clomazone	3	1.0	0.73	0.73	219
Fenoxaprop	3	1.0	0.12	0.12	35
Fluazifop-P-butyl	4	1.0	0.05	0.05	19
Flumetsulam	2	1.0	0.07	0.07	12
Flumiclorac Pentyl	2	1.0	0.04	0.04	6
Fomesafen	8	1.0	0.23	0.24	180
Glyphosate	22	1.0	0.65	0.66	1,416
Imazaquin	14	1.0	0.08	0.08	112
Imazethapyr	47	1.0	0.06	0.06	284
Lactofen	4	1.0	0.10	0.10	40
Metolachlor	4	1.4	1.74	2.51	891
Metribuzin	13	1.0	0.19	0.19	240
Paraquat	4	1.0	0.63	0.63	281
Pendimethalin	31	1.1	1.15	1.20	3,760
Quizalofop-ethyl	1	1.3	0.05	0.06	7
Sethoxydim	11	1.0	0.19	0.19	204
Thifensulfuron	10	1.0	0.002	0.002	2
Trifluralin	16	1.0	0.95	0.95	1,556

1/ Planted acres in 1997 for Illinois were 10.0 million acres.

Soybeans: Agricultural Chemical Applications, Indiana, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	30	1.0	0.42	0.42	685
Acifluorfen	2	1.0	0.10	0.10	13
Chlorimuron-ethyl	14	1.1	0.02	0.02	14
Clomazone	8	1.0	0.56	0.56	257
Fenoxaprop	14	1.0	0.14	0.14	104
Fluazifop-P-butyl	15	1.0	0.04	0.04	38
Flumetsulam	3	1.0	0.06	0.06	8
Fomesafen	16	1.0	0.20	0.20	175
Glyphosate	49	1.2	0.72	0.87	2,332
Imazaquin	20	1.0	0.11	0.11	119
Imazethapyr	33	1.0	0.06	0.06	110
Lactofen	5	1.0	0.07	0.07	18
Metolachlor	3	1.1	1.94	2.18	402
Metribuzin	9	1.1	0.17	0.19	87
Paraquat	4	1.0	0.46	0.46	90
Pendimethalin	33	1.1	0.98	1.06	1,898
Sethoxydim	7	1.0	0.14	0.14	56
Thifensulfuron	16	1.0	0.003	0.003	2

1/ Planted acres in 1997 for Indiana were 5.45 million acres.

Soybeans: Agricultural Chemical Applications, Iowa, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	4	1.0	0.47	0.47	182
Acifluorfen	6	1.0	0.17	0.17	112
Alachlor	7	1.0	2.58	2.58	1,843
Bentazon	10	1.0	0.73	0.73	734
Chlorimuron-ethyl	6	1.0	0.007	0.007	4
Clethodim	6	1.0	0.08	0.08	46
Clomazone	5	1.0	0.78	0.78	392
Fenoxaprop	12	1.0	0.12	0.12	150
Fluazifop-P-butyl	12	1.0	0.04	0.04	49
Flumetsulam	2	1.2	0.07	0.08	13
Flumiclorac Pentyl	3	1.0	0.03	0.03	8
Fomesafen	3	1.0	0.10	0.10	30
Glyphosate	14	1.2	0.53	0.62	934
Imazaquin	4	1.0	0.06	0.06	27
Imazethapyr	62	1.0	0.04	0.04	280
Lactofen	9	1.0	0.11	0.11	108
Metolachlor	2	1.1	2.49	2.79	724
Metribuzin	1	1.0	0.24	0.24	36
Pendimethalin	36	1.2	0.96	1.16	4,413
Sethoxydim	9	1.1	0.22	0.24	218
Thifensulfuron	8	1.0	0.002	0.002	2
Trifluralin	36	1.0	0.88	0.89	3,370

1/ Planted acres in 1997 for Iowa were 10.5 million acres.

Soybeans: Agricultural Chemical Applications, Kansas, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	7	1.0	0.32	0.32	52
Acifluorfen	17	1.0	0.17	0.17	72
Alachlor	1	1.0	1.62	1.62	58
Bentazon	14	1.0	0.69	0.69	230
Chlorimuron-ethyl	11	1.2	0.02	0.02	6
Flumiclorac Pentyl	2	1.0	0.02	0.02	1
Glyphosate	22	1.4	0.61	0.86	466
Imazaquin	28	1.1	0.10	0.10	71
Imazethapyr	14	1.0	0.05	0.05	18
Lactofen	3	1.0	0.10	0.10	8
Metolachlor	8	1.0	1.52	1.52	288
Metribuzin	22	1.0	0.40	0.40	214
Pendimethalin	34	1.0	0.88	0.88	744
Trifluralin	26	1.1	0.87	0.92	588

1/ Planted acres in 1997 for Kansas were 2.45 million acres.

Soybeans: Agricultural Chemical Applications, Kentucky, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	14	1.0	0.24	0.24	44
Bentazon	13	1.0	0.61	0.61	103
Chlorimuron-ethyl	7	1.0	0.04	0.04	3
Fenoxaprop	24	1.0	0.20	0.20	63
Fluazifop-P-butyl	27	1.1	0.10	0.11	38
Fomesafen	28	1.0	0.23	0.23	86
Glyphosate	40	1.2	0.72	0.87	448
Imazaquin	13	1.0	0.09	0.09	16
Imazethapyr	12	1.0	0.06	0.06	9
Metolachlor	13	1.0	1.90	1.90	321
Metribuzin	6	1.0	0.24	0.24	19
Paraquat	6	1.0	0.52	0.52	38
Pendimethalin	11	1.1	0.77	0.84	121
Sethoxydim	8	1.0	0.28	0.28	29
Trifluralin	5	1.1	0.89	0.98	59

1/ Planted acres in 1997 for Kentucky were 1.30 million acres.

Soybeans: Agricultural Chemical Applications, Louisiana, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	25	1.1	0.20	0.21	76
Bentazon	12	1.1	0.44	0.46	78
Chlorimuron-ethyl	10	1.3	0.02	0.02	3
Clethodim	3	1.0	0.14	0.14	5
Clomazone	17	1.0	0.68	0.68	161
Fluazifop-P-butyl	7	1.1	0.08	0.09	9
Fomesafen	11	1.0	0.25	0.25	38
Glyphosate	37	2.0	0.72	1.40	726
Imazaquin	25	1.1	0.06	0.06	21
Metolachlor	15	1.0	1.86	1.86	382
Metribuzin	20	1.0	0.20	0.20	57
Paraquat	7	1.1	0.49	0.51	49
Pendimethalin	8	1.1	0.56	0.61	64
Quizalofop-ethyl	6	1.0	0.05	0.05	4
Sethoxydim	8	1.0	0.22	0.22	26
Trifluralin	7	1.0	1.02	1.02	101
Insecticides:					
Lambdacyhalothrin	3	1.0	0.02	0.02	1
Methyl parathion	24	1.5	0.51	0.77	254
Thiodicarb	5	1.2	0.40	0.46	34

1/ Planted acres in 1997 for Louisiana were 1.40 million acres.

Soybeans: Agricultural Chemical Applications, Michigan, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	13	1.0	0.17	0.17	41
Chlorimuron-ethyl	24	1.0	0.02	0.02	10
Flumetsulam	12	1.0	0.06	0.06	13
Glyphosate	33	1.1	0.80	0.86	533
Imazaquin	12	1.0	0.07	0.07	16
Imazethapyr	39	1.0	0.05	0.05	35
Linuron	13	1.0	0.42	0.42	103
Metolachlor	20	1.0	1.97	1.97	752
Metribuzin	25	1.0	0.18	0.18	86
Pendimethalin	16	1.0	0.92	0.92	277
Quizalofop-ethyl	25	1.0	0.05	0.05	26
Thifensulfuron	10	1.0	0.003	0.003	1

1/ Planted acres in 1997 for Michigan were 1.90 million acres.

Soybeans: Agricultural Chemical Applications, Minnesota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	7	1.0	0.21	0.21	96
Acifluorfen	8	1.0	0.25	0.25	136
Alachlor	4	1.0	2.73	2.73	679
Bentazon	11	1.1	0.72	0.78	578
Clomazone	9	1.0	0.82	0.82	477
Fenoxaprop	3	1.0	0.16	0.16	34
Fluazifop-P-butyl	6	1.0	0.09	0.09	35
Flumetsulam	4	1.0	0.05	0.05	16
Glyphosate	6	1.3	0.64	0.86	356
Imazethapyr	71	1.0	0.04	0.04	209
Lactofen	6	1.0	0.10	0.10	38
Metolachlor	5	1.0	2.04	2.04	670
Metribuzin	2	1.0	0.35	0.35	52
Pendimethalin	15	1.1	1.06	1.20	1,195
Quizalofop-ethyl	4	1.2	0.05	0.06	14
Sethoxydim	10	1.0	0.13	0.13	92
Thifensulfuron	13	1.0	0.003	0.003	3
Trifluralin	37	1.0	0.84	0.84	2,098

1/ Planted acres in 1997 for Minnesota were 6.80 million acres.

Soybeans: Agricultural Chemical Applications, Mississippi, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	30	1.1	0.25	0.27	171
Bentazon	12	1.1	0.56	0.61	154
Chlorimuron-ethyl	29	1.0	0.02	0.02	13
Clethodim	9	1.0	0.20	0.20	36
Clomazone	3	1.0	0.73	0.73	41
Dimethenamid	3	1.0	0.84	0.84	44
Fluazifop-P-butyl	6	1.0	0.10	0.11	13
Flumetsulam	17	1.0	0.01	0.01	5
Fomesafen	4	1.0	0.24	0.24	21
Glyphosate	53	1.6	0.53	0.86	952
Imazaquin	21	1.2	0.08	0.10	46
Metolachlor	18	1.0	0.48	0.48	179
Metribuzin	16	1.0	0.28	0.28	97
Paraquat	4	1.0	0.47	0.47	39
Pendimethalin	14	1.0	0.85	0.86	251
Sethoxydim	6	1.1	0.32	0.36	46
Trifluralin	18	1.0	0.78	0.78	295
Insecticides:					
Methyl parathion	2	1.1	0.37	0.39	19

1/ Planted acres in 1997 for Mississippi were 2.10 million acres.

Soybeans: Agricultural Chemical Applications, Missouri, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	13	1.5	0.22	0.33	206
Acifluorfen	15	1.0	0.19	0.19	139
Bentazon	9	1.0	0.57	0.57	261
Chlorimuron-ethyl	13	1.2	0.02	0.03	16
Clethodim	3	1.0	0.14	0.14	18
Fenoxaprop	3	1.0	0.13	0.13	17
Fluazifop-P-butyl	3	1.0	0.05	0.05	7
Fomesafen	3	1.0	0.25	0.25	41
Glyphosate	22	1.2	0.77	0.91	999
Imazaquin	33	1.2	0.08	0.10	165
Imazethapyr	22	1.3	0.06	0.08	85
Lactofen	4	1.1	0.08	0.09	19
Metribuzin	14	1.0	0.27	0.27	187
Pendimethalin	32	1.3	0.89	1.12	1,772
Quizalofop-ethyl	7	1.0	0.05	0.05	15
Sethoxydim	3	1.0	0.15	0.15	19
Thifensulfuron	4	1.0	0.006	0.006	1
Trifluralin	26	1.0	0.94	0.94	1,176

1/ Planted acres in 1997 for Missouri were 4.90 million acres.

Soybeans: Agricultural Chemical Applications, Nebraska, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	10	1.0	0.20	0.20	70
Alachlor	10	1.0	2.10	2.10	754
Bentazon	5	1.0	0.83	0.83	152
Chlorimuron-ethyl	21	1.0	0.01	0.01	9
Clethodim	3	1.0	0.09	0.09	11
Clomazone	7	1.0	0.58	0.58	138
Fenoxaprop	3	1.0	0.11	0.11	12
Fluazifop-P-butyl	6	1.0	0.04	0.04	9
Flumetsulam	6	1.0	0.05	0.05	9
Glyphosate	26	1.4	0.59	0.85	773
Imazaquin	11	1.0	0.07	0.07	27
Imazethapyr	38	1.0	0.05	0.05	69
Metolachlor	5	1.0	1.83	1.83	289
Metribuzin	8	1.0	0.22	0.22	59
Pendimethalin	26	1.0	0.89	0.91	815
Quizalofop-ethyl	4	1.0	0.05	0.05	7
Sethoxydim	11	1.0	0.25	0.25	100
Thifensulfuron	13	1.0	0.003	0.003	2
Trifluralin	28	1.0	0.74	0.74	729

1/ Planted acres in 1997 for Nebraska were 3.50 million acres.

Soybeans: Agricultural Chemical Applications, North Carolina, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	29	1.0	0.27	0.27	108
Bentazon	13	1.0	0.76	0.76	134
Chlorimuron-ethyl	20	1.1	0.02	0.02	6
Dimethenamid	7	1.0	0.97	0.98	91
Fluazifop-P-butyl	5	1.0	0.20	0.20	14
Flumetsulam	5	1.0	0.05	0.05	4
Fomesafen	5	1.0	0.42	0.42	30
Glyphosate	50	1.1	0.68	0.73	516
Imazaquin	16	1.1	0.09	0.10	22
Metolachlor	9	1.2	1.88	2.19	287
Metribuzin	5	1.0	0.27	0.27	20
Paraquat	4	1.0	0.58	0.58	32
Pendimethalin	25	1.0	0.59	0.59	210
Insecticides:					
Lambdacyhalothrin	9	1.0	0.02	0.02	2

1/ Planted acres in 1997 for North Carolina were 1.40 million acres.

Soybeans: Agricultural Chemical Applications, Ohio, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	9	1.0	0.44	0.44	184
Alachlor	2	1.0	2.18	2.18	213
Bentazon	7	1.0	0.46	0.46	141
Chlorimuron-ethyl	32	1.0	0.02	0.02	33
Clethodim	2	1.0	0.09	0.09	10
Clomazone	9	1.0	0.65	0.66	275
Fenoxaprop	5	1.0	0.14	0.14	33
Fluazifop-P-butyl	6	1.0	0.07	0.07	19
Flumetsulam	1	1.0	0.06	0.06	3
Fomesafen	5	1.0	0.19	0.19	47
Glyphosate	53	1.6	0.42	0.68	1,620
Imazaquin	8	1.0	0.12	0.12	43
Imazethapyr	9	1.0	0.02	0.02	10
Lactofen	2	1.0	0.05	0.05	5
Linuron	1	1.0	0.59	0.59	32
Metolachlor	18	1.0	1.91	1.91	1,579
Metribuzin	28	1.0	0.25	0.25	311
Pendimethalin	12	1.1	0.68	0.78	404
Quizalofop-ethyl	10	1.0	0.04	0.04	18
Sethoxydim	2	1.0	0.26	0.26	24
Thifensulfuron	8	1.0	0.002	0.002	1

1/ Planted acres in 1997 for Ohio were 4.50 million acres.

Soybeans: Agricultural Chemical Applications, Pennsylvania, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Alachlor	7	1.0	1.32	1.32	32
Chlorimuron-ethyl	40	1.4	0.04	0.05	7
Flumetsulam	8	1.1	0.04	0.04	1
Glyphosate	10	1.0	0.58	0.58	22
Imazaquin	10	1.0	0.09	0.09	3
Imazethapyr	6	1.0	0.05	0.05	1
Linuron	8	1.0	0.51	0.51	16
Metolachlor	50	1.3	1.85	2.43	446
Metribuzin	43	1.3	0.28	0.37	59
Paraquat	6	1.2	0.28	0.33	8
Pendimethalin	18	1.0	0.77	0.77	51
Quizalofop-ethyl	12	1.0	0.06	0.06	2

1/ Planted acres in 1997 for Pennsylvania were 370,000 acres.

Soybeans: Agricultural Chemical Applications, South Dakota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	6	1.0	0.34	0.34	65
Acifluorfen	15	1.0	0.18	0.18	94
Bentazon	14	1.0	0.65	0.65	312
Chlorimuron-ethyl	5	1.0	0.005	0.005	1
Clethodim	11	1.0	0.05	0.05	20
Fenoxaprop	5	1.0	0.08	0.08	15
Fluazifop-P-butyl	6	1.0	0.03	0.03	6
Glyphosate	23	1.0	0.52	0.54	438
Imazethapyr	65	1.0	0.04	0.04	90
Lactofen	4	1.0	0.07	0.07	11
Pendimethalin	26	1.1	0.71	0.79	719
Quizalofop-ethyl	5	1.3	0.04	0.05	8
Sethoxydim	4	1.0	0.20	0.20	30
Thifensulfuron	13	1.0	0.002	0.002	1
Trifluralin	31	1.0	1.00	1.01	1,090

1/ Planted acres in 1997 for South Dakota were 3.50 million acres.

Soybeans: Agricultural Chemical Applications, Tennessee, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Acifluorfen	34	1.0	0.19	0.19	88
Bentazon	28	1.0	0.47	0.47	174
Chlorimuron-ethyl	22	1.1	0.01	0.02	5
Clethodim	12	1.1	0.10	0.12	20
Clomazone	3	1.0	0.91	0.91	37
Fenoxaprop	10	1.0	0.09	0.09	12
Fluazifop-P-butyl	17	1.3	0.08	0.11	25
Flumetsulam	3	1.0	0.04	0.04	2
Fomesafen	15	1.0	0.29	0.29	56
Glyphosate	42	1.3	0.71	0.89	498
Imazaquin	21	1.0	0.06	0.06	16
Metolachlor	17	1.0	1.48	1.48	324
Metribuzin	13	1.0	0.31	0.31	53
Paraquat	4	1.0	0.44	0.44	26
Pendimethalin	8	1.0	0.71	0.72	78
Sethoxydim	6	1.0	0.44	0.44	36
Trifluralin	20	1.0	0.74	0.74	193

1/ Planted acres in 1997 for Tennessee were 1.32 million acres.

Soybeans: Agricultural Chemical Applications, Wisconsin, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Flumetsulam	33	1.0	0.05	0.05	17
Glyphosate	7	1.6	0.65	1.07	79
Imazethapyr	57	1.0	0.05	0.05	30
Linuron	1	1.0	0.59	0.59	8
Metolachlor	17	1.0	1.73	1.73	294
Pendimethalin	21	1.1	0.99	1.12	240
Thifensulfuron	30	1.0	0.002	0.002	1

1/ Planted acres in 1997 for Wisconsin were 1.00 million acres.

Winter Wheat

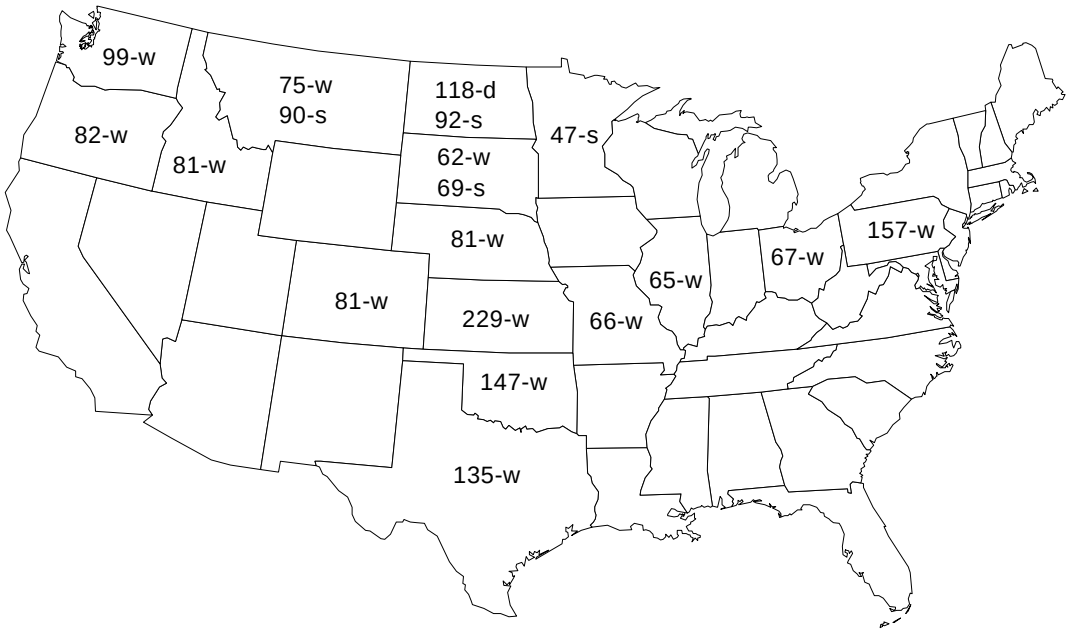
Nitrogen fertilizer was applied to 84 percent of the 1997 harvested area in the surveyed States; Colorado was the only State treating less than 75 percent of the grain area. Phosphate fertilizers were applied to 53 percent of the collective acreage, ranging from just 15 percent in Oregon to 92 percent in Ohio. All surveyed States treated at least a portion of the acreage with herbicides; 2,4-D was again the most prevalent in terms of area and total application.

All Spring Wheat

North Dakota Durum planted acres primary nutrient coverage increased for both nitrogen and phosphate fertilizers. Percent coverage applications of these two fertilizers to other spring wheat acres were 92 and 82 percent, respectively. The three most popular herbicides in terms of all spring wheat area covered were 2,4-D, MCPA, and Fenoxaprop, in that order. Dicamba was the third most used in 1997.

Wheat: Number of Usable Reports, 1997

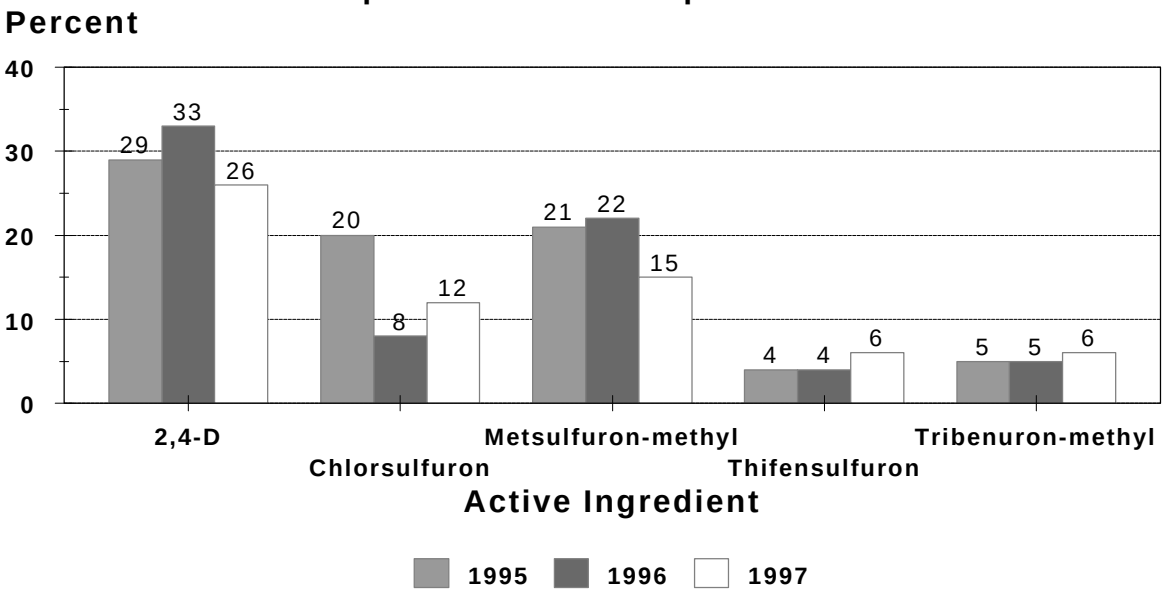
w - winter wheat; s - other spring wheat; d - durum wheat



Winter Wheat - Percent of Acres Treated

Top 5 Active Ingredients for 1997

Comparison to 10 Comparable States



Comparable states are CO, ID, KS, MT, NE, OK, OR, SD, TX and WA.

Winter Wheat: Fertilizer Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Harvested Acreage	Percent of Acres Treated and Total Applied					
		Nitrogen		Phosphate		Potash	
	1,000 Acres	Percent	Mil. Lbs	Percent	Mil. Lbs	Percent	Mil. Lbs
CO 1/	2,850	68	69.0	39	18.7		
ID	870	98	105.4	62	19.4	11	4.3
IL	1,150	91	103.8	69	62.1	77	86.9
KS	11,000	78	509.0	56	186.8	8	19.5
MO	1,040	92	98.2	81	45.4	70	49.4
MT	1,450	95	64.5	78	31.4	23	4.3
NE 1/	1,900	92	94.6	74	47.8		
OH	1,090	100	93.1	92	63.7	98	87.6
OK	5,400	90	317.5	47	83.6	7	6.4
OR 1/	840	100	75.3	15	4.7		
PA	175	81	7.3	60	5.2	59	5.2
SD 1/	1,050	78	38.7	58	15.3		
TX	4,100	78	267.2	36	49.1	16	10.8
WA	2,150	98	145.4	34	16.5	12	7.6
Total	35,065	84	1,989.0	53	649.7	15	282.0

1/ Insufficient reports to publish data for one or more of the fertilizer primary nutrients.

Winter Wheat: Fertilizer Primary Nutrient Applications,
States Surveyed and Total, 1997

Primary Nutrient	Harvested Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Colorado:	2,850					
Nitrogen		68	1.3	27	36	69.0
Phosphate		39	1.1	16	17	18.7
Potash 1/						
Idaho:	870					
Nitrogen		98	2.0	63	124	105.4
Phosphate		62	1.0	34	36	19.4
Potash		11	1.0	44	44	4.3
Illinois:	1,150					
Nitrogen		91	1.4	69	100	103.8
Phosphate		69	1.0	75	78	62.1
Potash		77	1.0	98	98	86.9
Kansas:	11,000					
Nitrogen		78	1.5	39	59	509.0
Phosphate		56	1.0	30	30	186.8
Potash		8	1.0	22	22	19.5

--continued

Winter Wheat: Fertilizer Primary Nutrient Applications, States Surveyed and Total, 1997 (continued)

Primary Nutrient	Harvested Acreage	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Missouri:	1,040					
Nitrogen		92	1.5	67	102	98.2
Phosphate		81	1.0	53	54	45.4
Potash		70	1.1	63	68	49.4
Montana:	1,450					
Nitrogen		95	1.4	32	47	64.5
Phosphate		78	1.1	26	28	31.4
Potash		23	1.0	13	13	4.3
Nebraska:	1,900					
Nitrogen		92	1.6	35	54	94.6
Phosphate		74	1.0	34	34	47.8
Potash 1/						
Ohio:	1,090					
Nitrogen		100	1.8	46	85	93.1
Phosphate		92	1.0	62	63	63.7
Potash		98	1.0	82	82	87.6
Oklahoma:	5,400					
Nitrogen		90	1.6	40	65	317.5
Phosphate		47	1.0	32	33	83.6
Potash		7	1.0	18	18	6.4
Oregon:	840					
Nitrogen		100	1.5	60	90	75.3
Phosphate		15	1.0	37	37	4.7
Potash 1/						
Pennsylvania:	175					
Nitrogen		81	1.3	40	51	7.3
Phosphate		60	1.1	45	50	5.2
Potash		59	1.1	45	50	5.2
South Dakota:	1,050					
Nitrogen		78	1.3	36	47	38.7
Phosphate		58	1.0	25	25	15.3
Potash 1/						
Texas:	4,100					
Nitrogen		78	1.4	61	84	267.2
Phosphate		36	1.0	32	33	49.1
Potash		16	1.0	16	17	10.8
Washington:	2,150					
Nitrogen		98	1.4	48	69	145.4
Phosphate		34	1.0	22	23	16.5
Potash		12	1.0	29	29	7.6
Total:	35,065					
Nitrogen		84	1.5	44	67	1,989.0
Phosphate		53	1.0	34	35	649.7
Potash		15	1.0	51	52	282.0

1/ Insufficient reports to publish data for one or more of the fertilizer primary nutrients.

Winter Wheat: Active Ingredients Applied and Publication Status
By States Surveyed, 1997

Active Ingredient	All	States Surveyed						
		CO	ID	IL	KS	MO	MT	NE
Herbicides								
2,4-D	P	P	P	*	P	P	P	P
Atrazine	*	*			*			
Bromoxynil	P		P	*			P	
Chlorsulfuron	P	*			P		*	*
Clopyralid	*	*	*					
Cyanazine	*		*					
Dicamba	P	P	*		P		P	*
Diclofop-methyl	P		*				*	
Difenzoquat	P		P				*	
Diuron	P							
Fenoxaprop	P		*				*	
Glyphosate	P	P	*		P		P	*
Imazamethabenz	P		P				*	
MCPA	P	*	P		*		P	
Metolachlor	*							
Metribuzin	P						*	
Metsulfuron-methyl	P	P	*		P		P	P
Paraquat	*							*
Picloram	*				*		*	
Prosulfuron	*							
Thifensulfuron	P	*	P	P	*	P	*	*
Triallate	P		*				P	
Triasulfuron	P	P			P		P	P
Tribenuron-methyl	P	*	P	P	*	P	P	*
Trifluralin	*	*						
Insecticides								
Carbaryl	*							
Chlorpyrifos	P	*						
Dimethoate	P	*						
Disulfoton	*	*						
Malathion	*							
Methomyl	*							
Methyl parathion	P							
Fungicides								
Benomyl	*							
Propiconazole	P							
Thiophanate-methyl	*							
Triadimefon	*							

--continued

Winter Wheat: Active Ingredients Applied and Publication Status
By States Surveyed, 1997 (continued)

Active Ingredient	States Surveyed						
	OH	OK	OR	PA	SD	TX	WA
Herbicides							
2,4-D	*	P	P	*	P	P	P
Atrazine							
Bromoxynil	*		P		*	*	P
Chlorsulfuron		P	P		*	P	P
Clopyralid							*
Cyanazine							
Dicamba	*	*	P		P	*	P
Diclofop-methyl			P				*
Difenzoquat			*				*
Diuron			P				
Fenoxaprop							
Glyphosate	*	*	P	*	P	*	P
Imazamethabenz			*	*			*
MCPA		*	P		P		P
Metolachlor				*			
Metribuzin			P				*
Metsulfuron-methyl		P	P		P	P	*
Paraquat				*		*	
Picloram							
Prosulfuron					*		*
Thifensulfuron	*	*	P	P	P	*	P
Triallate			*				*
Triasulfuron		P	*		*	*	*
Tribenuron-methyl	*	*	P	P	P	*	P
Trifluralin						*	
Insecticides							
Carbaryl						*	
Chlorpyrifos						*	
Dimethoate		P	*			P	*
Disulfoton			*				
Malathion		*				*	
Methomyl						*	
Methyl parathion		P				*	*
Fungicides							
Benomyl			*				*
Propiconazole			P	*		*	P
Thiophanate-methyl			*				*
Triadimefon				*			

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Winter Wheat: Pesticide Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Harvested Acreage	Percent of Acres Treated and Total Applied: Herbicide		Insecticide 1/		Fungicide		Other Chemical	
	1,000 Acres	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs	Percent	1,000 Lbs
CO	2,850	64	803	13	321				
ID	870	98	631						
IL	1,150	40	16						
KS	11,000	31	819						
MO	1,040	33	67						
MT 2/	1,450	88	1,089						
NE	1,900	53	189						
OH	1,090	20	56						
OK	5,400	38	435	13	234				
OR 2/	840	100	516			24	87		
PA 2/	175	21	8						
SD	1,050	89	383						
TX 2/	4,100	24	181	18	351				
WA 2/	2,150	98	1,584			1	4		
Tot.	35,065	46	6,777	5	919	1	94		

1/ Total applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.
2/ Insufficient reports to publish data for one or more of the pesticide classes.

Winter Wheat: Agricultural Chemical Applications,
States Surveyed, 1997 1/

Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	24	1.0	0.41	0.42	3,486
Bromoxynil	4	1.0	0.24	0.25	353
Chlorsulfuron	11	1.0	0.01	0.01	44
Dicamba	6	1.1	0.10	0.11	237
Diclofop-methyl	1	1.0	0.81	0.81	177
Difenzoquat	*	1.0	0.52	0.52	78
Diuron	*	1.0	1.35	1.35	45
Fenoxaprop	1	1.0	0.05	0.05	10
Glyphosate	6	1.2	0.36	0.45	978
Imazamethabenz	1	1.0	0.33	0.33	67
MCPA	5	1.0	0.30	0.30	488
Metribuzin	2	1.1	0.27	0.29	193
Metsulfuron-methyl	14	1.0	0.003	0.003	15
Thifensulfuron	7	1.0	0.01	0.01	34
Triallate	1	1.0	1.09	1.09	418
Triasulfuron	5	1.0	0.01	0.01	26
Tribenuron-methyl	8	1.0	0.007	0.007	20
Insecticides:					
Chlorpyrifos	2	1.3	0.43	0.55	289
Dimethoate	3	1.0	0.31	0.31	311
Methyl parathion	2	1.1	0.38	0.40	228
Fungicides:					
Propiconazole	1	1.1	0.21	0.23	46

* Applied on less than one percent of the acres.
1/ Harvested acres in 1997 for the 14 states surveyed were 35.1 million acres. States included are CO, ID, IL, KS, MO, MT, NE, OH, OK, OR, PA, SD, TX, and WA.

Winter Wheat: Agricultural Chemical Applications, Colorado, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	57	1.0	0.30	0.30	487
Dicamba	4	1.0	0.08	0.08	9
Glyphosate	16	1.1	0.41	0.46	202
Metsulfuron-methyl	14	1.0	0.004	0.004	2
Triasulfuron	27	1.0	0.01	0.01	11

1/ Harvested acres in 1997 for Colorado were 2.85 million acres.

Winter Wheat: Agricultural Chemical Applications, Idaho, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	32	1.0	0.27	0.27	75
Bromoxynil	59	1.0	0.26	0.26	135
Difenzoquat	11	1.0	0.49	0.49	47
Imazamethabenz	10	1.0	0.30	0.30	26
MCPA	61	1.0	0.31	0.31	162
Thifensulfuron	64	1.0	0.01	0.01	6
Tribenuron-methyl	67	1.0	0.006	0.006	3

1/ Harvested acres in 1997 for Idaho were 870,000 acres.

Winter Wheat: Agricultural Chemical Applications, Illinois, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Thifensulfuron	39	1.0	0.02	0.02	8
Tribenuron-methyl	39	1.0	0.008	0.008	4

1/ Harvested acres in 1997 for Illinois were 1.15 million acres.

Winter Wheat: Agricultural Chemical Applications,
Kansas, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	11	1.0	0.49	0.49	601
Chlorsulfuron	15	1.0	0.01	0.01	20
Dicamba	6	1.0	0.10	0.10	64
Glyphosate	3	1.0	0.32	0.32	109
Metsulfuron-methyl	10	1.0	0.002	0.002	2
Triasulfuron	3	1.0	0.02	0.02	6

1/ Harvested acres in 1997 for Kansas were 11.0 million acres.

Winter Wheat: Agricultural Chemical Applications,
Missouri, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	21	1.0	0.28	0.28	61
Thifensulfuron	27	1.0	0.02	0.02	4
Tribenuron-methyl	27	1.0	0.008	0.008	2

1/ Harvested acres in 1997 for Missouri were 1.04 million acres.

Winter Wheat: Agricultural Chemical Applications,
Montana, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	72	1.0	0.38	0.39	404
Bromoxynil	4	1.0	0.19	0.19	11
Dicamba	38	1.3	0.11	0.14	74
Glyphosate	35	1.6	0.31	0.50	251
MCPA	15	1.0	0.20	0.20	45
Metsulfuron-methyl	29	1.0	0.004	0.004	2
Triallate	11	1.0	1.38	1.38	219
Triasulfuron	8	1.0	0.01	0.01	1
Tribenuron-methyl	10	1.0	0.006	0.006	1

1/ Harvested acres in 1997 for Montana were 1.45 million acres.

Winter Wheat: Agricultural Chemical Applications, Nebraska, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	29	1.0	0.32	0.32	177
Metsulfuron-methyl	24	1.0	0.004	0.004	2
Triasulfuron	17	1.0	0.01	0.01	4

1/ Harvested acres in 1997 for Nebraska were 1.90 million acres.

Winter Wheat: Agricultural Chemical Applications, Oklahoma, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	14	1.0	0.41	0.41	317
Chlorsulfuron	23	1.0	0.01	0.01	13
Metsulfuron-methyl	20	1.0	0.002	0.002	2
Triasulfuron	2	1.0	0.01	0.01	1
Insecticides:					
Dimethoate	7	1.0	0.19	0.19	76
Methyl parathion	5	1.1	0.34	0.39	111

1/ Harvested acres in 1997 for Oklahoma were 5.40 million acres.

Winter Wheat: Agricultural Chemical Applications, Oregon, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	52	1.0	0.31	0.31	137
Bromoxynil	4	1.0	0.31	0.32	11
Chlorsulfuron	28	1.0	0.01	0.01	3
Dicamba	39	1.0	0.04	0.04	12
Diclofop-methyl	4	1.0	0.80	0.80	26
Diuron	4	1.0	1.35	1.35	45
Glyphosate	18	1.0	0.26	0.26	38
MCPA	14	1.0	0.46	0.46	54
Metribuzin	58	1.1	0.22	0.24	116
Metsulfuron-methyl	49	1.0	0.003	0.003	1
Thifensulfuron	14	1.0	0.01	0.01	1
Tribenuron-methyl	17	1.0	0.01	0.01	2
Fungicides:					
Propiconazole	16	1.0	0.30	0.30	39

1/ Harvested acres in 1997 for Oregon were 840,000 acres.

Winter Wheat: Agricultural Chemical Applications, Pennsylvania, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
Thifensulfuron	14	1.0	0.02	0.02	*
Tribenuron-methyl	14	1.0	0.008	0.008	*

* Total applied was less than 1,000 pounds.
1/ Harvested acres in 1997 for Pennsylvania were 175,000 acres.

Winter Wheat: Agricultural Chemical Applications, South Dakota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	63	1.0	0.34	0.34	225
Dicamba	15	1.5	0.16	0.23	36
Glyphosate	16	1.2	0.46	0.56	93
MCPA	12	1.0	0.12	0.12	15
Metsulfuron-methyl	21	1.0	0.004	0.004	1
Thifensulfuron	17	1.0	0.01	0.01	2
Tribenuron-methyl	17	1.0	0.007	0.007	1

1/ Harvested acres in 1997 for South Dakota were 1.05 million acres.

Winter Wheat: Agricultural Chemical Applications, Texas, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	10	1.0	0.37	0.37	143
Chlorsulfuron	4	1.0	0.01	0.01	2
Metsulfuron-methyl	9	1.0	0.006	0.006	2
Insecticides:					
Dimethoate	10	1.0	0.35	0.35	146

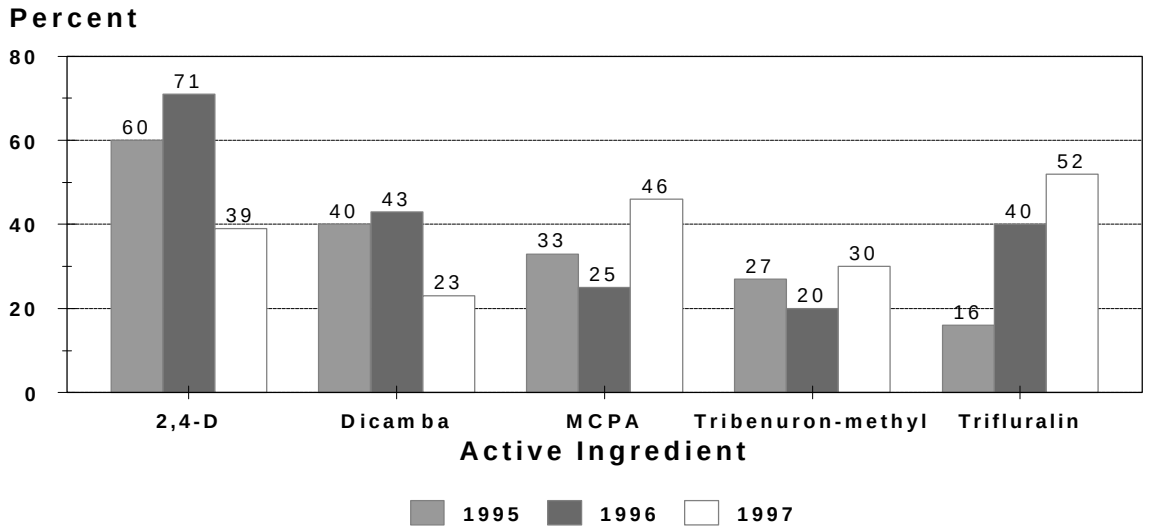
1/ Harvested acres in 1997 for Texas were 4.10 million acres.

Winter Wheat: Agricultural Chemical Applications, Washington, 1997 1/

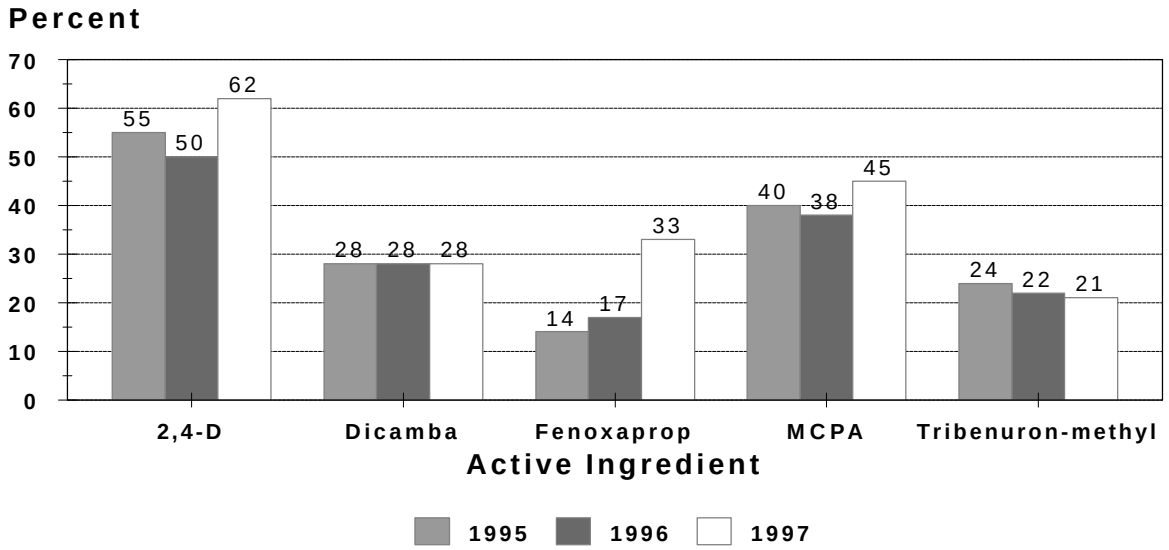
Agricultural Chemical	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	52	1.0	0.73	0.75	834
Bromoxynil	28	1.0	0.25	0.25	153
Chlorsulfuron	17	1.0	0.01	0.01	5
Dicamba	5	1.0	0.05	0.05	6
Glyphosate	17	1.4	0.34	0.46	170
MCPA	25	1.0	0.27	0.27	144
Thifensulfuron	24	1.0	0.01	0.01	6
Tribenuron-methyl	25	1.0	0.006	0.006	3
Fungicides:					
Propiconazole	1	1.0	0.15	0.15	2

1/ Harvested acres in 1997 for Washington were 2.15 million acres.

Durum Wheat - Percent of Acres Treated
Top 5 Active Ingredients for 1997



Spring Wheat - Percent of Acres Treated
Top 5 Active Ingredients for 1997
Comparison to 3 Comparable States



Comparable states are MN, MT and ND.

Durum and Other Spring Wheat: Fertilizer Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Percent of Acres Treated and Total Applied					
		Nitrogen		Phosphate		Potash	
	1,000 Acres	Percent	Mil. Lbs	Percent	Mil. Lbs	Percent	Mil. Lbs
Durum							
ND	2,700	95	170.9	77	48.7	8	4.1
Other Spring							
MN	2,450	98	209.1	91	77.4	73	73.9
MT	4,350	79	153.5	66	68.2	15	10.2
ND	8,800	99	621.8	92	248.3	24	43.8
SD 1/	2,500	90	140.2	70	61.6		
Total	18,100	92	1,124.6	82	455.5	25	127.9

1/ Insufficient reports to publish data for one or more of the fertilizer primary nutrients.

Durum and Other Spring Wheat: Fertilizer Primary Nutrient Applications, States Surveyed by Type and Total Other Spring, 1997

Primary Nutrient	Planted Acreage	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	1,000 Acres	Percent	Number	Pounds per Acre		Mil. Lbs
Durum						
North Dakota:	2,700					
Nitrogen		95	1.7	38	66	170.9
Phosphate		77	1.0	24	24	48.7
Potash		8	1.0	20	20	4.1
Other Spring						
Minnesota:	2,450					
Nitrogen		98	1.7	52	87	209.1
Phosphate		91	1.0	35	35	77.4
Potash		73	1.0	42	42	73.9
Montana:	4,350					
Nitrogen		79	1.6	28	45	153.5
Phosphate		66	1.0	23	24	68.2
Potash		15	1.0	16	16	10.2
North Dakota:	8,800					
Nitrogen		99	1.8	40	72	621.8
Phosphate		92	1.0	31	31	248.3
Potash		24	1.0	20	20	43.8
South Dakota:	2,500					
Nitrogen		90	1.5	42	62	140.2
Phosphate		70	1.0	35	35	61.6
Potash 1/						
Total:	18,100					
Nitrogen		92	1.7	40	67	1,124.6
Phosphate		82	1.0	30	31	455.5
Potash		25	1.0	28	28	127.9

Durum and Other Spring Wheat:
Active Ingredients Applied and Publication Status
By States Surveyed, 1997

Active Ingredient	States Surveyed: Durum ND	Other Spring Wheat All	MN	MT	ND	SD
Herbicides						
2,4-D	P	P	P	P	P	P
Bromoxynil	P	P	P	P	P	P
Chlorsulfuron		*				*
Clopyralid	*	P	*	*	*	*
Dicamba	P	P	*	P	P	P
Difenzoquat		*	*			
Fenoxaprop	P	P	P	P	P	P
Glyphosate	P	P	*	P	P	*
Imazamethabenz		P	*	*	*	
MCPA	P	P	P	P	P	P
Metsulfuron-methyl	*	P		P		P
Picloram		P		*	*	*
Prosulfuron		*		*		*
Thifensulfuron		P	P	*	P	P
Triallate	P	P		P	*	
Triasulfuron		P		P		*
Tribenuron-methyl	P	P	P	P	P	P
Trifluralin	P	P	*		P	*
Insecticides						
Carbofuran	*	*			*	
Chlorpyrifos	*					
Dimethoate		*		*		
Lambdacyhalothrin	*	*		*	*	
Methyl parathion	*	*	*		*	
Fungicides						
Benomyl	*					
Mancozeb	*	*	*		*	

P Usage data are published for this active ingredient.
* Usage data are not published for this active ingredient.

Durum and Other Spring Wheat: Pesticide Use by State, 1997
Percent of Acres Treated and Total Amount Applied

State	Planted Acreage	Herbicide Percent	Herbicide 1,000 Lbs	Insecticide Percent	Insecticide 1,000 Lbs	Fungicide Percent	Fungicide 1,000 Lbs	Other Chemical Percent	Other Chemical 1,000 Lbs
	1,000 Acres								
Durum									
ND 1/	2,700	93	2,221	2	12				
Spring									
MN 1/	2,450	94	1,434						
MT 1/	4,350	94	3,254						
ND 1/	8,800	88	4,583						
SD	2,500	86	886						
Tot.1/	18,100	90	10,157	1	12				

1/ Insufficient reports to publish data for one or more of the pesticide classes.

Durum Wheat: Agricultural Chemical Applications, North Dakota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	39	1.0	0.42	0.43	448
Bromoxynil	7	1.0	0.20	0.20	39
Dicamba	23	1.1	0.08	0.09	53
Fenoxaprop	16	1.0	0.06	0.06	24
Glyphosate	16	1.0	0.47	0.47	207
MCPA	46	1.0	0.30	0.31	382
Triallate	19	1.0	0.98	0.98	507
Tribenuron-methyl	30	1.0	0.009	0.009	7
Trifluralin	52	1.0	0.39	0.39	550

1/ Planted acres in 1997 for North Dakota were 2.70 million acres.

Other Spring Wheat: Agricultural Chemical Applications, States Surveyed, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	61	1.0	0.31	0.31	3,443
Bromoxynil	8	1.0	0.24	0.24	367
Clopyralid	4	1.0	0.08	0.08	50
Dicamba	27	1.0	0.07	0.07	332
Fenoxaprop	30	1.0	0.07	0.07	402
Glyphosate	10	1.1	0.26	0.28	522
Imazamethabenz	2	1.0	0.32	0.32	120
MCPA	42	1.0	0.36	0.37	2,809
Metsulfuron-methyl	6	1.0	0.004	0.004	4
Picloram	6	1.0	0.02	0.02	18
Thifensulfuron	10	1.0	0.01	0.01	19
Triallate	8	1.0	1.12	1.12	1,589
Triasulfuron	2	1.0	0.008	0.008	3
Tribenuron-methyl	20	1.0	0.007	0.007	27
Trifluralin	6	1.0	0.39	0.39	448

1/ Planted acres in 1997 for the 4 states surveyed were 18.1 million acres. States included are MN, MT, ND, and SD.

Other Spring Wheat: Agricultural Chemical Applications, Minnesota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	55	1.1	0.27	0.30	407
Bromoxynil	7	1.0	0.43	0.43	69
Fenoxaprop	58	1.0	0.10	0.10	143
MCPA	69	1.0	0.44	0.46	769
Thifensulfuron	40	1.0	0.009	0.009	9
Tribenuron-methyl	41	1.0	0.005	0.005	5

1/ Planted acres in 1997 for Minnesota were 2.45 million acres.

Other Spring Wheat: Agricultural Chemical Applications, Montana, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	83	1.0	0.34	0.34	1,239
Bromoxynil	9	1.0	0.25	0.25	92
Dicamba	31	1.1	0.09	0.10	131
Fenoxaprop	8	1.1	0.07	0.08	29
Glyphosate	23	1.1	0.24	0.27	272
MCPA	17	1.0	0.30	0.32	237
Metsulfuron-methyl	21	1.0	0.004	0.004	3
Triallate	23	1.0	1.18	1.18	1,156
Triasulfuron	9	1.0	0.008	0.008	3
Tribenuron-methyl	14	1.0	0.01	0.01	6

1/ Planted acres in 1997 for Montana were 4.35 million acres.

Other Spring Wheat: Agricultural Chemical Applications, North Dakota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	53	1.0	0.28	0.28	1,306
Bromoxynil	10	1.0	0.21	0.21	182
Dicamba	33	1.0	0.06	0.06	165
Fenoxaprop	38	1.0	0.06	0.06	215
Glyphosate	5	1.0	0.37	0.37	157
MCPA	52	1.0	0.35	0.36	1,631
Thifensulfuron	5	1.0	0.01	0.01	5
Tribenuron-methyl	20	1.0	0.008	0.008	14
Trifluralin	12	1.0	0.38	0.38	410

1/ Planted acres in 1997 for North Dakota were 8.80 million acres.

Other Spring Wheat: Agricultural Chemical Applications,
South Dakota, 1997 1/

Agricultural Chemical	Area Applied	Appli-cations	Rate per Application	Rate per Crop Year	Total Applied
	Percent	Number	Pounds per Acre		1,000 Lbs
Herbicides:					
2,4-D	56	1.0	0.35	0.35	492
Bromoxynil	4	1.0	0.24	0.24	23
Dicamba	24	1.0	0.06	0.06	34
Fenoxaprop	13	1.0	0.05	0.05	16
MCPA	23	1.0	0.30	0.30	172
Metsulfuron-methyl	10	1.0	0.004	0.004	1
Thifensulfuron	13	1.0	0.01	0.01	4
Tribenuron-methyl	13	1.0	0.006	0.006	2

1/ Planted acres in 1997 for South Dakota were 2.50 million acres.

Survey Procedures: Large screening samples were drawn from the NASS List Sampling Frame. This extensive sampling frame covers all types of farms and accounts for about 82% of all land in farms in the U.S. The screening samples were selected in such a way as to insure that all farms on the list had a possibility of being selected. Farms that were more likely to be producers of crops of interest were more likely to be in the screening sample. The sampled farms were screened to determine the presence of all the crops of interest. From this subpopulation of operations identified as producing the crop of interest, a subsample of farms was selected in such a way as to insure that each identified producer had an opportunity to be selected. In general, larger farms were more likely to be selected than smaller farms.

Once a farm producing a particular crop of interest was selected, one field containing this crop was randomly selected from all the fields on the farm producing that crop. The operator of the sampled field was personally interviewed to obtain information on chemical applications made to the selected field.

Estimation Procedures: The chemical applications data, reported by product name or trade name are reviewed within state and across states for reasonableness and consistency. This review compares reported data with manufacturer's recommendations and with data from other farm operators using the same product. Following this review, product information are converted to an active ingredient level. The chemical usage estimates in this publication consist of survey estimates of those active ingredients.

Estimates of the total amount of active ingredient applied are based on the acreage estimates published in the annual NASS report "**Crop Production - 1997 Summary**" [Cr Pr 2-1(98)] for corn, soybeans, wheat, and potatoes. The estimates of cotton acreage were revised and published in the monthly NASS report "**Crop Production**" [Cr Pr 2-2(5-98)] released on May 12, 1998. The estimates for total amount applied will not be revised even if there are subsequent revisions to acreage for a given crop.

Detailed data within a table may not multiply across or add down due to independent rounding of the published values.

Reliability: The probability nature of the survey provides expansion of data so that the estimates are statistically representative of chemical use on the targeted crops in the surveyed States. The reliability of these survey results are 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).

Non-sampling errors are errors that 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 between collection and publication. In these surveys, all survey procedures and analysis were carried out in a consistent and orderly manner to minimize the occurrence of these types of errors.

Variability for estimates of acres treated will be higher than the variability for estimates of application rates. This is because application rates have a narrower range of responses, are recommended by the manufacturer of the product, and are generally followed.

Sampling variability of the estimates differed considerably by chemical and crop. In general, the more often the chemical was applied, the smaller the sampling variability. For example, estimates of use of a commonly used product, such as Atrazine, will exhibit less variability than a more rarely used product. For more commonly used chemicals, cv's will range from 1-20 percent at the U.S. level and 5-75 percent at the State level. Some rarer items will have cv's above 100 percent. These items have insufficient data for publication and these instances are noted.

Terms and Definitions

Active ingredient: The active ingredient is the specific chemical which kills or controls the target pests. Usage data are reported by pesticide product and are converted to an amount of active ingredient. A single method of conversion has been chosen for active ingredients having more than one way of being converted. For example in this report, copper compounds are expressed in their metallic copper equivalent, and others such as 2,4-D and glyphosate are expressed in their acid equivalent.

Agricultural chemicals: The phrase agricultural chemicals refers to the active ingredients in fertilizers and pesticides.

Application Rates: The application rates refer to the average number of pounds of a fertilizer primary nutrient or pesticide active ingredient applied to an acre of land. Rate per acre is the average number of pounds applied in one application. Rate per crop year is the average number of pounds applied counting multiple applications. Number of applications is the average number of times a treated acre receives a specific agricultural chemical.

Area applied: The area that represents the percentage of crop acres receiving one or more applications of a specific agricultural chemical. This report does not contain acre treatments. However, acre treatments can be calculated by multiplying the acres planted by the percent of area applied and the average number of applications.

Common name: The common name is an officially recognized name for an active ingredient. This report shows active ingredient by common name.

Crop year: A crop year refers to the period immediately following harvest for the previous crop through harvest of the current crop.

Fertilizer: The term fertilizer refers to applications of the primary nutrients, nitrogen, phosphate, and potash.

Pesticides: As defined by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), pesticides include 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.

The four classes of pesticides presented in this report and the pests targeted are: herbicides - weeds, insecticides - insects, fungicides - fungi, and other chemicals - other forms of life. Miticides and nematicides are included as insecticides while soil fumigants, growth regulators, defoliants, and desiccants are included as other chemicals. This report excludes pesticides used for seed treatments, for spot treatments, and for postharvest applications to the commodity.

Trade name: A trademark name given to a specific formulation of a pesticide product. A formulation contains a specific concentration of the active ingredient, carrier materials, and other ingredients such as emulsifiers and wetting agents. Some formulations as in the case of pre-mixes, can contain more than one active ingredient.

Trade Name, Common Name, and Pesticide Class

The following is a list of the common name, associated class and trade name of active ingredients in this publication. The classes are herbicides (H), insecticides (I), fungicides (F), and other chemicals (O). This list is provided as an aid in reviewing pesticide data. Pre-mixes are not cataloged. The list is not complete for all pesticides used on field crops and NASS does not mean to imply the use of any specific trade name.

Class	Common Name	Trade Name
H	2,4-D	several
H	2,4-DB	Butoxone, Butyrac
I	abamectin	Agri-Mek, Zephyr, Avid
I	acephate	Orthene, Payload
H	acetochlor	Harness, Surpass
H	acifluorfen	Blazer, Tackle
H	alachlor	Lasso
I	aldicarb	Temik
H	ametryn	Evik
I	amitraz	Ovasyn
H	atrazine	AAtrex
I	azadirachtin	Align, Neemix, Margosan-O
I	azinphos-methyl	Guthion
F	basic copper sulfate	copper sulfate
F	benomyl	Benlate
H	bensulide	Prefar
H	bentazon	Basagran, Pledge
I	bifenthrin	Capture
H	bromoxynil	Buctril, Brominal
I	Bt (Bacillus thuringiensis)	several
I	buprofezin	Applaud
H	butylate	Genate, Sutan
O	cacodylic acid	Bolls-Eye, Cotton-Aide
F	captan	Captan
I	carbaryl	Sevin, Savit
I	carbofuran	Furadan
F	carboxin	Vitavax
H	chloramben	Amiben
I	chlorethoxyfos	Fortress
I	chlorfenapyr	Alert, Pirate
H	chlorimuron-ethyl	Classic
O	chloropicrin	several
F	chlorothalonil	Bravo
I	chlorpyrifos	Lorsban, Dursban
H	chlorsulfuron	Glean
H	clethodim	Select
H	clomazone	Command
H	clopyralid	Stinger
F	copper ammonium carbonate	Copper-Count-N
F	copper hydroxide	several
F	copper oxychloride sulfate	C-O-C-S
F	copper resinate	Tenn-Cop
F	copper sulfate	copper sulfate
I	cryolite	Kryocide
H	cyanazine	Bladex
O	cyclanilide	Finish
I	cyfluthrin	Baythroid
F	cymoxanil	Curzate

--continued

Class	Common Name	Trade Name
I	cypermethrin	Ammo, Cymbush
O	cytokinins	Triggrr, Burst, Promalin
I	deltamethrin	Decis
I	diazinon	several
H	dicamba	Banvel
O	dichloropropene	Telone
H	diclofop-methyl	Hoelon
F	dicloran	Botran, Allison
I	dicofol	Kelthane
I	dicrotophos	Bidrin
H	difenzoquat	Avenge
H	diflubenzuron	Dimilin
H	dimethenamid	Frontier
O	dimethipin	Harvade
I	dimethoate	several
F	dimethomorph	Acrobat
H,O	diquat	diquat
I	disulfoton	Di-Syston
H	diuron	Karmex, Direx
H	DSMA	DSMA
I	endosulfan	Thiodan
O	endothall	Des-I-Cate, Accelerate
H	EPTC	Eptam, Eradicane, Genep
I	esfenvalerate	Asana
H	ethalfluralin	Sonalan, Curbit
O	ethephon	Ethrel, Prep, Cerone
I	ethoprop	Mocap
I	ethyl parathion	several
F	etridiazole	Terraclor Super X
O	fatty alcohols	several
I	fenamiphos	Nemacur
I	fenbutatin-oxide	Vendex
H	fenoxaprop-ethyl and p-ethyl	Whip, Option
I	fenpropathrin	Danitol
I	fenvalerate	several
H	fluazifop-P-butyl	Fusilade
H	flumetralin	Prime+
H	flumetsulam	Broadstrike
H	flumiclorac pentyl	Resource
H	fluometuron	Cotoran, Meturon
H	fomesafen	Reflex
I	fonofos	Dyfonate
O	gibberellic acid	ProGibb, ProVide, GibGro, Prom
O	gossyplure	NoMate, Stirrup
H	glyphosate	Roundup, Ranger, Rattler, Rodeo
H	halosulfuron	Permit
O	hexadecadienyl acetate	NoMate, Stirrup, Checkmate
H	hexazinone	Velpar
O	IBA	PGR IV
H	imazamethabenz	Assert
H	imazapyr	Arsenal
H	imazaquin	Scepter
H	imazethapyr	Pursuit
I	imidacloprid	Admire
F	iprodione	Rovral
H	isopropalin	Paarlan
H	lactofen	Cobra

--continued

Class	Common Name	Trade Name
I	lambdacyhalothrin	Karate
H	linuron	Lorox, Linex
I	malathion	several
O	maleic hydrazide	Royal MH-30, Super Sprout Stop
F	mancozeb	several
F	maneb	several
H	MCPA	several
O	mepiquat chloride	Pix, Ponnax
F	metalaxyl	Ridomil
O	metam-sodium	Vapam
I	methamidophos	Monitor
H	methazole	Probe
I	methidathion	Supracide
I	methomyl	Lannate
I	methyl parathion	several
F	metiram	Polyram
H	metolachlor	Dual
H	metribuzin	Sencor, Lexone
H	metsulfuron-methyl	Ally
O	monocarbamide dihydrogen sulfate	Enquik
H	MSMA	several
I	naled	Dibrom
H	napropamide	Devrinol
H	naptalam	Alanap
I	neem oil, hydrophobic extract	Trilogy
H	nicosulfuron	Accent
H	norflurazon	Solicam, Evital, Zorial
I	nosema locustae	Semaspore
I	oxamyl	Vydate
I	oxydemeton-methyl	Metasystox-R
H	oxyfluorfen	Goal
H,O	paraquat	Gramoxone, Cyclone, Starfire
F	PCNB	Terraclor
H	pebulate	Tillam
H	pendimethalin	Prowl
I	permethrin	Ambush, Pounce
I	phorate	Thimet
I	phosmet	Imidan
I	phosphamidon	phosphamidon
H	picloram	Tordon
I	piperonyl butoxide	Butacide, PBO-8, Incite
H	primisulfuron	Beacon
I	profenofos	Curacron
H	prometryn	Caparol, Cotton-Pro
H	propachlor	Ramrod
F	propamocarb hydrochloride	Tattoo
H	propanil	Stam
I	propargite	Comite, Omite
F	propiconazole	Tilt, Banner, Orbit
H	prosulfuron	Peak
I	pyrethrins	Buhach, Firmotox
H	pyridate	Tough
I	pyriproxyfen	Knack
H	pyrithiobac-sodium	Staple
H	quizalofop-ethyl	Assure
H	rimsulfuron	Basis

--continued

Class	Common Name	Trade Name
I	rotenone	rotenone
H	sethoxydim	Poast
H	simazine	Princep
O	sodium chlorate	several
H,O	sulfcarbamide	Enquik
H	sulfosate	Touchdown
I	sulfur	several
O	sulfuric acid	sulfuric acid
I	sulprofos	Bolstar
I	tebufenozide	Confirm
I	tebupirimphos	Aztec
H	tebuthiuron	Spike
I	tefluthrin	Force
I	terbufos	Counter
H	terbutryn	Igran
O	thidiazuron	Dropp
H	thifensulfuron methyl	Pinnacle
I	thiodicarb	Larvin
F	thiophanate-methyl	Topsin
I	tralomethrin	Scout
F	triadimefon	Bayleton
H	triallate	Far-Go
H	triasulfuron	Amber
H	tribenuron-methyl	Express
O	tribufos	Def, Folex
I	trichlorfon	Dylox, Proxol
H	triclopyr	Rely
H	trifluralin	Treflan, Trilin, Trific
I	trimethacarb	Broot
F	triphenyltin hydroxide	several
H	vernolate	Vernam
I	zeta-cypermethrin	Fury, Mustang

Index

	Page	
	Narrative	Table
Corn	3	5
Cotton, Upland	16	18
Estimation Procedures	90	
Highlights	2	
Overview	1	
Potatoes, Fall	39	41
Reliability	90	
Report Features	97	
Soybeans	53	55
Survey Procedures	90	
Terms and Definitions	91	
Trade Names, Common Names, and Classes	92	
Wheat, Durum	71	85
Wheat, Other Spring	71	85
Wheat, Winter	71	73

Report Features

Released May 20, 1998 by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, U.S. Department of Agriculture. For information on "Agricultural Chemical Usage" call (202) 720-2127, office hours 7:30 a.m. to 4:00 p.m. ET.

The next "Agricultural Chemical Usage" report will be released July 21, 1998. This report will cover agricultural chemical use for the 1997 crop year for fruits and nuts in major states.

The next "Agricultural Chemical Usage" report for field crops will be released in May 1999. This report will cover agricultural chemical use for the 1998 crop year for major states.

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

Glenn Strasburg, Environmental Statistician	(202) 720-7492
Jim Ewing, Environmental Statistician	(202) 690-2284
C. Ray Halley, Chief, Crops Branch	(202) 720-2127
Bill Dowdy, Head, Field Crops Section	(202) 720-3843
Vince Matthews, Head, Fruits, Vegetable and Special Crops Section	(202) 720-3843

Listed below is the contact within the Economic Research Service for additional information.

Robert Reinsel, Data and Survey Coordinator Resource Economic Division	(202) 694-5506

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. 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, 14th and 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

All NASS reports are available by subscription free of charge direct to your e-mail address. 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**.