

**OVERVIEW:** The agricultural chemical use estimates in this report are based on data compiled from the Agricultural Resources Management Study (ARMS) conducted during the fall of 2003. All results refer to on-farm use of commercial fertilizers and pesticides on the 2003 South Dakota corn, sorghum, and barley crops.

## CORN

**SOUTH DAKOTA:** Nitrogen was applied to 92 percent of South Dakota's 4.4 million corn acres in 2003. When compared to other states (IA, MN, NE, and ND), South Dakota had the fewest number of nitrogen applications, at 1.3; however, the rate of 71 pounds per acre was similar to other states. Phosphate was applied to 78 percent of the corn acreage, averaging 1.1 applications per acre with a rate of 42 pounds per acre. Potash was applied to 25 percent of the acreage, averaging 1.1 applications per acre, with a rate of 23 pounds per acre.

Herbicide was applied to 96 percent of the acreage. Glyphosate was the most popular herbicide for corn, treating 50 percent of the acres at the rate of 0.64 pounds per acre. Atrazine was also a popular chemical, with applications made on 30 percent of the state's corn, at a rate of .67 pounds per acre. Acetochlor was used on 26 percent of the acreage and Dicamba was used on 12 percent.

**NATIONAL:** Nitrogen was applied to 96 percent of the 2003 corn planted acreage in the program states<sup>1/</sup>. Corn growers used

an average of 1.7 applications per acre while applying 78 pounds of nitrogen per treatment. In the program states, 79 percent of the corn acreage received a phosphate application, while potash was applied to 64 percent of the planted acreage.

In 2003, 29 percent of the corn planted acreage was treated with insecticides, with Cyfluthrin and Tebupirimphos being the most widely used insecticides. Herbicides were applied to 95 percent of the corn acres in 2003. Atrazine was the most widely used herbicide, with 68 percent of the acres being treated at a rate of 1.04 pounds per acre. Acetochlor, at 26 percent of the planted acres treated, was the second most widely applied herbicide, followed by Glyphosate and S-Metolachlor.

1/ Program states include Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, New York, North Carolina, North Dakota, Ohio, Pennsylvania, South Dakota, Texas, and Wisconsin.

### CORN, SOUTH DAKOTA, SELECTED YEARS

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2003 1/**

Year	Acres Planted	Nitrogen			Phosphate			Potash			Herbicide	Insecticide
		Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Area Applied
	(1,000)	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Percent
1999	3,600	98	1.5	60	88	1.1	37	49	1.0	24	95	18
2000	4,300	99	1.5	63	92	1.0	36	39	1.0	21	100	15
2001	3,800	95	1.5	72	69	1.0	43	32	1.0	29	96	8
2003	4,400	92	1.3	71	78	1.1	42	25	1.1	23	96	2/

1/ Data for South Dakota was not collected in 2002. 2/ Insufficient reports to publish data for one or more pesticide classes.

### CORN, SELECTED STATES

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2003**

State	Acres Planted	Nitrogen			Phosphate			Potash			Herbicide	Insecticide
		Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Area Applied
	(1,000)	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Percent
IA	12,400	93	1.4	94	59	1.0	61	65	1.0	80	96	14
MN	7,200	95	1.6	74	89	1.0	44	73	1.0	64	95	13
NE	8,100	95	1.9	67	76	1.0	35	25	1.0	19	93	36
ND	2,050	98	1.7	33	91	1.0	27	20	1.0	10	98	1/
SD	4,400	92	1.3	71	78	1.1	42	25	1.1	23	96	1/
Total	72,770	96	1.7	78	79	1.1	53	64	1.0	78	95	29

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

**CORN, SOUTH DAKOTA 2003 1/**

**Frequency and Extent of Chemical Usage by Active Ingredient**

Active Ingredient	Common Trade Name	Area Applied	Applications	Rate per Application	Total Applied
		Percent	Number	Lbs/Acre	1,000 Lbs.
Acetochlor 2/	Harness, Surpass	26	1.0	1.61	1,869
Atrazine	Atrazine	30	1.0	0.67	899
Bromoxynil	Buctril	4	1.0	0.28	46
Clopyralid 2/	Stinger	4	1.0	0.08	14
Dicamba 2/	Banvel, Clarity	12	1.0	0.23	116
Dimethenamid-P 2/	Frontier	3	1.0	0.18	23
Flumetsulam 2/	Pytho	4	1.0	0.03	5
Glufosinate-ammonium	Liberty, Rely	4	1.1	0.42	81
Glyphosate 2/	Roundup	50	1.5	0.64	2,225
Isoxaflutole	Balance	10	1.0	0.07	30
Mesotrione	2/	6	1.0	0.11	29
Nicosulfuron 2/	Accent	4	1.0	0.02	4
Primisulfuron 2/	Beacon	4	1.0	0.02	4
Rimsulfuron 2/	Basis	4	1.0	0.01	2

1/ Planted area in 2003 for South Dakota was 4.4 million acres. 2/ Chemical marketed under several trade names.

**SORGHUM**

**SOUTH DAKOTA:** Nitrogen was applied to 84 percent of South Dakota's 270,000 sorghum acres in 2003. Growers averaged 1.3 applications at a rate of 42 pounds per acre. Phosphate was applied to 54 percent of the state's sorghum, at a rate of 30 pounds per acre. Potash was applied to only 3 percent of the acreage, with an average application rate of 10 pounds per acre.

In 2003, 87 percent of South Dakota's sorghum crop was treated with herbicide. The most popular herbicide used was glyphosate which was applied to 52 percent of the acreage with applications averaging 1.3, at a rate of 0.56 pounds per acre. Atrazine was the second most popular herbicide, applied to 46 percent of the sorghum acres. Atrazine was applied at a rate of 0.98 pounds per acre.

**NATIONAL:** Nitrogen was applied to 82 percent of the 2003 sorghum planted acreage in the program states<sup>2/</sup>. Sorghum growers in the program states applied nitrogen on average 1.3

times per acre, putting down 61 pounds of nitrogen per treatment. Fertilizers with phosphate were applied to 49 percent of the planted acreage and 9 percent of the acreage received potash applications.

Sorghum producers in the states surveyed, treated 85 percent of the acreage with herbicide. Atrazine was the most widely applied herbicide with 70 percent of the acreage treated. It was applied at a rate of 1.04 pounds per acre. Glyphosate was the second most widely used herbicide, applied to 27 percent of the planted sorghum acreage in the program states.

In 2003, 8 percent of the sorghum planted acreage was treated with insecticides. Terbufos was the most widely applied insecticide, which was applied to 4 percent of the sorghum acres in the program states.

2/ Program states include Colorado, Kansas, Missouri, Nebraska, Oklahoma, South Dakota, and Texas.

**SORGHUM, SOUTH DAKOTA**

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2003 1/**

Year	Acres Planted	Nitrogen			Phosphate			Potash			Herbicide	Insecticide
		Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Area Applied
2003	(1,000) 270	Percent 84	Number 1.3	Lbs/Acre 42	Percent 54	Number 1.0	Lbs/Acre 30	Percent 3	Number 1.0	Lbs/Acre 10	Percent 87	Percent 1/

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

**SORGHUM, SELECTED STATES**

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2003**

State	Acres Planted	Nitrogen			Phosphate			Potash			Herbicide	Insecticide
		Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Applications	Rate per Application	Area Applied	Area Applied
	(1,000)	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Percent
CO	270	61	1.4	33	39	1.0	51	0	1.0	2	52	1/
KS	3,550	97	1.3	55	55	1.0	28	4	1.0	35	90	1/
NE	660	99	1.4	61	40	1.0	23	1	1.0	9	98	4
SD	270	84	1.3	42	54	1.0	30	3	1.0	10	87	1/
Total	8,465	82	1.3	61	49	1.0	31	9	1.0	27	85	8

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

**SORGHUM, SOUTH DAKOTA 2003 1/**

**Frequency and Extent of Chemical Usage by Active Ingredient**

Active Ingredient	Common Trade Name	Area Applied	Appli-cations	Rate per Application	Total Applied
		Percent	Number	Lbs/Acre	1,000 Lbs.
2-4,D	2/	20	1.1	0.38	23
Alachlor	Lasso	11	1.0	2.11	64
Atrazine	Atrazine	46	1.0	0.98	121
Dicamba 2/	Clarity	16	1.0	0.13	6
Dimethenamid 2/	Frontier	8	1.0	1.39	31
Glyphosate 2/	Roundup	52	1.3	0.56	109
Metolachlor 2/	Bicep, Dual	3	1.0	1.14	10
Quinclorac	Paramount	12	1.0	0.21	7
S-Metolachlor 2/	Dual II Magnum	13	1.0	1.42	49

1/ Planted area in 2003 for South Dakota was 270,000 acres. 2/ Chemical marketed under several trade names.

**BARLEY**

**SOUTH DAKOTA:** In 2003, 82 percent of the South Dakota barley crop was treated with nitrogen. The average number of applications was 1.2, with a rate of 32 pounds per acre. South Dakota had a lower nitrogen application rate than several surrounding states, including MN, MT, ND, and WY. Phosphate was applied to 78 percent of the barley crop, with applications averaging 1.1 at a rate of 29 pounds per acre. Potash was applied to 13 percent of the barley crop. The potash application rate, at 18 pounds per acre was lower than that of the surrounding states of MN and WY.

pounds of nitrogen per treatment. In the program states, 79 percent of the acres received a phosphate application, while potash was applied to 29 percent of the barley acres.

Herbicides were applied to 93 percent of the barley acreage in 2003. MCPA was the most widely used herbicide with 45 percent of the planted acreage treated, at a rate of 0.32 pounds per acre. The next most widely applied herbicides was 2, 4-D, followed by Bromoxynil, and Fenoxaprop.

Herbicide was applied to 86 percent of South Dakota's barley crop. The most popular herbicide was MCPA, which was applied to 42 percent of the acreage at a rate of 0.28 pounds per acre. Bromoxynil was the second most used herbicide, applied to 31 percent of the acreage at a rate of 0.22 pounds per acre.

In 2003, 3 percent of the barley planted acreage was treated with insecticides. Based on total pounds applied, Methyl parathion was the most widely used insecticide. Fungicides were applied to 7 percent of the barley planted acreage in the program states.

**NATIONAL:** Nitrogen was applied to 93 percent of the 2003 barley planted acreage in the program states<sup>3/</sup>. Barley growers used an average of 1.4 applications per acre, while applying 40

3/ Program states include California, Idaho, Minnesota, Montana, North Dakota, Pennsylvania, South Dakota, Utah, Washington, Wisconsin, and Wyoming.

**BARLEY, SOUTH DAKOTA**

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2003 1/**

Year	Acres Planted	Nitrogen			Phosphate			Potash			Herbicide	Insecticide
		Area Applied	Appli-cations	Rate per Application	Area Applied	Appli-cations	Rate per Application	Area Applied	Appli-cations	Rate per Application	Area Applied	Area Applied
2003	(1,000) 75	Percent 82	Number 1.2	Lbs/Acre 32	Percent 78	Number 1.1	Lbs/Acre 29	Percent 13	Number 1.0	Lbs/Acre 18	Percent 86	Percent 1/

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

**BARLEY, SELECTED STATES**

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2003**

State	Acres Planted	Nitrogen			Phosphate			Potash			Herbicide	Insecticide
		Area Applied	Appli-cations	Rate per Application	Area Applied	Appli-cations	Rate per Application	Area Applied	Appli-cations	Rate per Application	Area Applied	Area Applied
	(1,000)	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Percent
MN	190	91	1.4	45	87	1.0	32	66	1.0	32	89	8
MT	1,100	92	1.3	33	88	1.0	30	52	1.0	16	93	2
ND	2,050	98	1.7	33	91	1.0	27	20	1.0	10	98	4
SD	75	82	1.2	32	78	1.1	29	13	1.0	18	86	1/
WY	90	78	1.0	95	60	1.0	44	22	1.0	35	83	10
Total	4,850	93	1.4	40	79	1.0	29	29	1.0	20	93	3

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

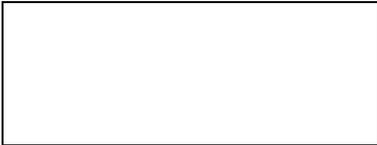
**BARLEY, SOUTH DAKOTA 2003 1/**

**Frequency and Extent of Chemical Usage by Active Ingredient**

Active Ingredient	Common Trade Name	Area Applied	Applications	Rate per Application	Total Applied
		Percent	Number	Lbs/Acre	1,000 Lbs.
2-4,D	2/	20	1.0	0.55	9
Bromoxynil	Bronate, Bucril	31	1.0	0.22	5
Dicamba 2/	Clarity	15	1.0	0.06	1
Fenoxaprop	Puma	24	1.0	0.05	1
Glyphosate 2/	Roundup	18	1.1	0.43	6
MCPA	Bronate	42	1.0	0.28	9

1/ Planted area in 2003 for South Dakota was 75,000 acres. 2/ Chemical marketed under several trade names.

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