



# South Dakota 2004 AGRICULTURAL CHEMICAL USAGE

Released August 2005

**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 2004. All results refer to on-farm use of commercial fertilizers and pesticides on the 2004 South Dakota soybean, winter wheat, and spring wheat crops.

## SOYBEANS

**SOUTH DAKOTA:** Nitrogen was applied to 42 percent of South Dakota's 4.15 million soybean acres in 2004. When compared to other states (IA, MN, NE, and ND), South Dakota had a similar number of nitrogen applications, at 1.5; however, the rate of 15 pounds per acre was well below North Dakota's 19 pounds per acre and Iowa's 24 pounds per acre. Phosphate was applied to 45 percent of the soybean acreage, averaging 1.4 applications per acre with a rate of 44 pounds per acre. Potash was applied to 8 percent of the acreage, averaging 1.6 applications per acre, with a rate of 22 pounds per acre.

Herbicide was applied to 96 percent of the acreage. Glyphosate was the most popular herbicide for soybeans, treating 89 percent of the acres. Pendimethalin and Sulfosate were the next most widely used herbicides, with both being applied on 5 percent of the state's soybeans. Insecticides were applied to 19 percent of the state's soybean acreage.

**NATIONAL:** Nitrogen was applied to 21 percent of the 2004 soybean planted acreage in the program states<sup>1/</sup>. Soybean growers used an average of 1.5 applications per acre while applying 18 pounds of nitrogen per treatment. In the program states, 26 percent of the soybean acreage received a phosphate application, while potash was applied to 23 percent of the planted acreage.

In 2004, 97 percent of the soybean planted acreage was treated with herbicides. Glyphosate was the most widely used herbicide, with 87 percent of the acres being treated. Chlorimuron-ethyl, at 7 percent of the planted acres treated, was the second most widely applied herbicide. Insecticide was applied to 4 percent of the program state's soybean planted acreage.

1/ Program states include Arkansas, Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio, and South Dakota.

### SOYBEANS, SOUTH DAKOTA, SELECTED YEARS

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2004 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
1998	3,450	32	1.0	27	32	1.0	35	11	1.0	8	96	2/
1999	4,100	47	1.0	20	47	1.0	45	19	1.0	27	98	3/
2000	4,400	38	1.0	14	43	1.0	35	12	1.0	23	98	3/
2002	4,250	37	1.1	18	41	1.0	54	15	1.4	27	100	19
2004	4,150	42	1.5	15	45	1.4	44	8	1.6	22	96	19

1/ Data for South Dakota was not collected in 2001 or 2003. 2/ Insufficient reports to publish data. 3/ Total applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.

### SOYBEANS, SELECTED STATES

**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2004**

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	10,200	10	1.6	24	11	1.5	58	15	1.5	71	98	1
MN	7,300	19	1.7	17	18	1.5	39	16	1.6	46	98	1/
NE	4,800	25	1.4	14	28	1.4	41	7	1.4	27	94	15
ND	3,750	64	1.4	19	63	1.3	36	11	1.5	26	99	1/
SD	4,150	42	1.5	15	45	1.4	44	8	1.6	22	96	19
Total	61,150	21	1.5	18	26	1.5	47	23	1.5	81	97	4

1/ Insufficient reports to publish data.

**SOYBEANS, SOUTH DAKOTA**  
**Frequency and Extent of Chemical Usage by Active Ingredient, 2004 1/**

Active Ingredient	Common Trade Name	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
		Percent	Number	Lbs. Per Acre	Lbs. Per Acre	1,000 Lbs.
<b>Herbicides</b>						
Clethodim	Select	2	1.2	0.08	0.10	7
Glyphosate	Roundup	89	1.6	0.68	1.09	4,040
Glyphosate diam salt	Touchdown	2	1.0	0.69	0.69	52
Imazethapyr	Extreme, Pursuit	3	1.0	0.05	0.05	6
Pendimethalin	Prowl	5	1.0	0.83	0.83	168
Sulfosate	Touchdown	5	1.2	1.26	1.47	276
Trifluralin	Treflan	4	1.0	0.89	0.89	158
<b>Insecticides</b>						
Esfenvalerate	Asana	4	1.0	0.05	0.05	8
Lambda-cyhalothrin	Karate, Warrior	10	1.0	0.02	0.02	8

1/ Planted acreage in 2004 for South Dakota was 4.15 million acres.

**WINTER WHEAT**

**SOUTH DAKOTA:** In 2004, 77 percent of South Dakota's 1,650,000 winter wheat acres were treated with nitrogen. The average number of applications was 1.6, with a rate of 51 pounds per acre. South Dakota had a higher application rate than the surrounding states of Montana and Nebraska. Phosphate was applied to 58 percent of the winter wheat crop, with applications averaging 1.2 at a rate of 38 pounds per acre. Potash was applied to 7 percent of the acreage.

Herbicide was applied to 66 percent of South Dakota's winter wheat crop. The most popular herbicide was MCPA, which was applied to 20 percent of the acreage. Glyphosate was the second most used herbicide, applied to 19 percent of the acreage. Fungicides were applied to 13 percent of the state's winter wheat crop.

**NATIONAL:** Nitrogen was applied to 84 percent of the 2004 winter wheat planted acreage in the program states<sup>2/</sup>.

Winter wheat growers used an average of 2.0 applications per acre, while applying 44 pounds of nitrogen per treatment. In the program states, 55 percent of the acres received a phosphate application, while potash was applied to 16 percent of the winter wheat acres.

Herbicides were applied to 45 percent of the winter wheat acreage in 2004. Metsulfuron-methyl was the most widely applied herbicide with 15 percent of the planted acreage treated. 2, 4-D and Glyphosate were the next most widely applied herbicides, both treating 13 percent of the winter wheat acreage. In 2004, 7 percent of the winter wheat planted acreage was treated with insecticides. Fungicides were applied to 2 percent of the winter wheat acreage in the program states.

2/ Program states include Colorado, Idaho, Illinois, Kansas, Michigan, Missouri, Montana, Nebraska, Ohio, Oklahoma, Oregon, South Dakota, Texas, and Washington.

**WINTER WHEAT, SOUTH DAKOTA**  
**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2004 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
	(1,000)	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Percent
1996	1,580	78	1.2	40	65	1.0	28	2/	2/	2/	65	2/
1997	1,050	78	1.3	36	58	1.0	25	2/	2/	2/	89	3/
1998	1,500	94	1.5	37	92	1.0	26	2/	2/	2/	88	2/
2000	1,350	91	1.4	35	61	1.0	30	12	1.0	8	56	2/
2004	1,650	77	1.6	51	58	1.2	38	7	1.3	33	66	2/

1/ Data for South Dakota not collected in 1999, 2001, 2002, or 2003. 2/ Insufficient reports to publish data. 3/ Total applied excludes Bt's (Bacillus thuringiensis). Quantities are not available because amounts of active ingredient are not comparable between products.

**WINTER WHEAT, SELECTED STATES**  
**Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2004**

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
MT	1,900	92	1.6	30	83	1.1	28	21	1.1	9	95	1/
NE	1,850	73	1.8	32	42	1.2	26	3	1.7	13	51	1/
SD	1,650	77	1.6	51	58	1.2	38	7	1.3	33	66	1/
Total	37,120	84	2.0	44	55	1.4	33	16	1.2	47	45	7

1/ Insufficient reports to publish data.

**WINTER WHEAT, SOUTH DAKOTA  
Frequency and Extent of Chemical Usage by Active Ingredient, 2004 1/**

Active Ingredient	Common Trade Name	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
		Percent	Number	Lbs. Per Acre	Lbs. Per Acre	1,000 Lbs.
<b>Herbicides</b>						
2,4-D	2/	16	1.5	0.31	0.48	125
2,4-DP, Dimeth. salt	Amine	10	1.0	0.52	0.52	88
Bromoxynil octanoate	Bronate Advanced	18	1.0	0.22	0.22	64
Dicamba	Banvel, Clarity	7	1.6	0.13	0.21	23
Glyphosate	Roundup	19	1.6	0.45	0.75	228
MCPA	2/	20	1.0	0.24	0.24	77
Metsulfuron-methyl	Ally	13	1.0	0.002	0.002	3/
Thifensulfuron	Harmony	14	1.2	0.008	0.009	2
Triasulfuron	Amber, Rave	3	1.0	0.03	0.03	1
Tribenuron-methyl	Express	13	1.2	0.004	0.004	1
<b>Fungicides</b>						
Pyraclostrobin	Headline	8	1.1	0.08	0.10	13

1/ Planted acreage in 2004 for South Dakota was 1.65 million acres. 2/ Chemical marketed under several trade names. 3/ Total applied is less than 500 pounds.

**OTHER SPRING WHEAT**

**SOUTH DAKOTA:** Nitrogen was applied to 92 percent of South Dakota's 1,600,000 spring wheat acres in 2004. Growers averaged 1.7 applications at a rate of 54 pounds per acre. Phosphate was applied to 68 percent of the state's spring wheat, at a rate of 40 pounds per acre. Potash was applied to only 19 percent of the acreage, with an average application rate of 22 pounds per acre.

In 2004, 89 percent of South Dakota's spring wheat crop was treated with herbicide. The most popular herbicide used was MCPA which was applied to 39 percent of the acreage. 2, 4-D was the second most popular herbicide, applied to 25 percent of the spring wheat acres. Fungicide was applied to 14 percent of South Dakota's spring wheat acreage, with Tebuconazole the most widely used fungicide.

**NATIONAL:** Nitrogen was applied to 93 percent of the 2004 other spring wheat planted acreage in the program states<sup>3/</sup>. Spring wheat growers in the program states

applied nitrogen on average 2.0 times per acre, putting down 48 pounds of nitrogen per treatment. Fertilizers with phosphate were applied to 79 percent of the planted acreage and 25 percent of the acreage received potash applications.

Spring wheat producers in the states surveyed treated 96 percent of the acreage with herbicide. MCPA was the most widely applied herbicide with 46 percent of the acreage treated. Fenoxaprop was the second most widely used herbicide, applied to 31 percent of the planted spring wheat acreage in the program states. In 2004, 20 percent of the spring wheat planted acreage was treated with fungicides. Tebuconazole was the most widely applied fungicide, which was applied to 12 percent of the spring wheat acres in the program states.

3/ Program states include Idaho, Minnesota, Montana, North Dakota, Oregon, South Dakota, and Washington.

**OTHER SPRING WHEAT, SOUTH DAKOTA  
Acreage, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2004 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
	(1,000)	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Number	Lbs/Acre	Percent	Percent
1995	1,250	95	1.3	38	68	1.0	26	12	1.0	15	97	NA
1997	2,500	90	1.5	42	70	1.0	35	2/	2/	2/	86	NA
1998	1,950	85	1.4	41	66	1.0	35	11	1.0	26	73	2/
2000	1,650	95	1.4	42	83	1.0	26	12	1.0	14	93	2/
2004	1,600	92	1.7	54	68	1.2	40	19	1.3	22	89	2/

1/ Data for South Dakota not collected in 1996, 1999, 2001, 2002, or 2003. 2/ Insufficient reports to publish data.

**OTHER SPRING WHEAT, SELECTED STATES**  
**Acres, Percent Receiving Fertilizer and Chemicals, Number of Applications, Rate of Application, 2004**

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	1,700	98	1.6	67	91	1.1	43	54	1.2	32	99	10
MT	3,000	79	1.7	34	69	1.3	26	13	1.4	16	95	1/
ND	6,200	98	2.5	46	86	1.6	32	27	1.5	16	97	1/
SD	1,600	92	1.7	54	68	1.2	40	19	1.3	22	89	1/
Total	13,710	93	2.0	48	79	1.4	33	25	1.4	21	96	2

1/ Insufficient reports to publish data.

**OTHER SPRING WHEAT, SOUTH DAKOTA**  
**Frequency and Extent of Chemical Usage by Active Ingredient, 2004 1/**

Active Ingredient	Common Trade Name	Area Applied	Applications	Rate per Application	Rate per Crop Year	Total Applied
		Percent	Number	Lbs. Per Acre	Lbs. Per Acre	1,000 Lbs.
<b>Herbicides</b>						
2,4-D	2/	25	1.2	0.33	0.40	161
2,4-DP, Dimeth. salt	Amine	9	1.0	0.28	0.28	42
Bromoxynil	Bronate, Buctril	13	1.0	0.22	0.22	45
Bromoxynil octanoate	Bronate advanced	16	1.0	0.26	0.26	69
Dicamba	Banvel, Clarity	16	1.1	0.10	0.10	26
Fenoxaprop	Puma	4	1.0	0.07	0.07	4
Fluroxypyr	Starane	8	1.0	0.06	0.06	7
Glyphosate	Roundup	14	1.4	0.45	0.63	143
MCPA	2/	39	1.0	0.25	0.25	154
MCPA, dimethyl. salt	MCPA Amine	2	1.0	0.23	0.23	7
Metsulfuron-methyl	Ally	9	1.0	0.002	0.002	3/
Thifensulfuron	Harmony	22	1.0	0.008	0.008	3
Tribenuron-methyl	Express	21	1.0	0.005	0.005	2
<b>Fungicides</b>						
Propiconazole	Bumper, Tilt	5	1.0	0.07	0.07	6
Pyraclostrobin	Headline	5	1.0	0.05	0.05	4
Tebuconazole	Folicur	7	1.0	0.13	0.13	14

1/ Planted acreage in 2004 for South Dakota was 1.6 million acres. 2/ Chemical marketed under several trade names. 3/ Total applied is less than 500 pounds.

Carter Anderson, Director Steve Noyes, Deputy Director
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