



# Minnesota Ag News – Chemical Use

## Soybeans: Fall 2015



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The 2015 Agricultural Chemical Use Survey of soybean producers collected data about fertilizer and pesticide use as well as pest management practices in growing soybeans.

### Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients, primarily nitrogen (N), phosphate (P<sub>2</sub>O<sub>5</sub>), and potash (K<sub>2</sub>O). Of the three primary macronutrients, potash was the most widely used on soybean acres planted in Minnesota according to the latest USDA, National Agricultural Statistics Service – *Agricultural Chemical Use* report. Minnesota farmers applied potash to 29 percent of planted acres at an average rate of 60 pounds per acre per year. Macronutrients nitrogen and phosphate were applied to 19 and 27 percent of soybean acres, at an average rate of 14 and 50 pounds per acre per year, respectively. The secondary macronutrient, sulfur, was applied to 6 percent of acres planted to soybeans.

### Pesticide Use

The pesticide active ingredients used on soybeans are classified in this report as herbicides (targeting weeds), insecticides (targeting insects), fungicides (targeting fungal disease) and other chemicals (targeting all other pests and other materials, including extraneous crop foliage).

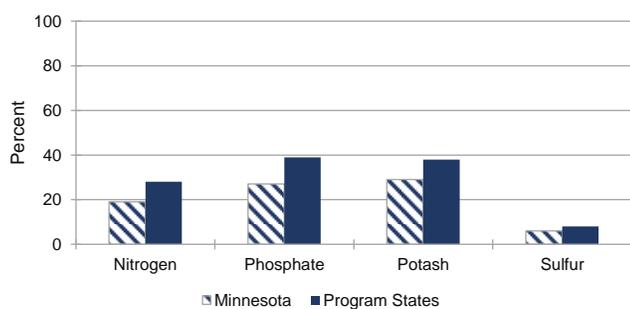
Herbicide active ingredients were applied to 96 percent of the soybeans planted. Glyphosate potassium salt was the most widely used pesticide overall, and was the active ingredient with the greatest total amount. Fungicide and insecticide active ingredients were applied to 11 and 56 percent, respectively, of soybean acres planted in Minnesota.

	Minnesota			Program States <sup>1</sup>		
	Planted acres treated (%)	Rate applied per year (pounds per acre)	Total pounds applied (1,000 pounds)	Planted acres treated (%)	Rate applied per year (pounds per acre)	Total pounds applied (1,000 pounds)
<b>Fertilizer Use on Soybeans</b>						
Nitrogen	19	14	19,400	28	17	382,300
Phosphate	27	50	102,700	39	51	1,563,100
Potash	29	60	131,200	38	83	2,503,500
Sulfur	6	10	4,600	8	12	77,600
<b>Pesticide Use on Soybeans by Active Ingredient</b>						
<b>FUNGICIDE:</b>						
Fluxapyroxad	5	0.044	16	3	0.047	126
Propiconazole	2	0.116	17	3	0.113	311
Pyraclostrobin	6	0.090	39	4	0.109	373
TOTAL FUNGICIDE	11		118	11		1,413
<b>HERBICIDE:</b>						
Chlorimuron-Ethyl	5	0.027	11	12	0.023	214
Clethodim	11	0.124	104	9	0.098	718
Cloransulam-Methyl	10	0.019	14	7	0.021	116
Dimethenamid-P	3	0.489	96	4	0.505	1,517
Fluazifop-P-Butyl	8	0.061	38	4	0.077	226
Flumioxazin	6	0.076	32	10	0.079	613
Fomesafen Sodium	31	0.230	545	16	0.244	3,034
Glufosinate-Ammonium	3	0.756	153	5	0.620	2,313
Glyphosate	21	0.956	1,502	8	1.037	6,448
Glyphosate Dim. Salt	3	1.345	347	4	1.384	4,478
Glyphosate Iso. Salt	24	1.013	1,811	30	1.106	25,920
Glyphosate Pot. Salt	51	1.551	5,975	55	1.619	70,089
Imazethapyr	10	0.070	56	11	0.052	434
Lactofen	1	0.120	13	3	0.132	344
Metribuzin	4	0.154	42	9	0.260	1,836
Pyroxasulfone	3	0.097	25	3	0.098	240
Quizalofop-P-Ethyl	2	0.038	7	2	0.045	62
S-Metolachlor	4	0.852	242	11	1.321	11,535
Saflufenacil	7	0.034	20	8	0.031	198
Sulfentrazone	18	0.140	190	17	0.175	2,368
TOTAL HERBICIDE	96		11,723	96		150,246
<b>INSECTICIDE:</b>						
Beta-Cyfluthrin	2	0.031	6	1	0.029	17
Bifenthrin	11	0.062	54	6	0.060	261
Chlorpyrifos	15	0.426	484	5	0.386	1,382
Esfenvalerate	2	0.032	5	(Z)	0.034	12
Gamma-Cyhalothrin	5	0.006	2	2	0.007	9
Imidacloprid	2	0.061	11	1	0.067	60
Lambda-Cyhalothrin	31	0.029	69	9	0.031	210
Thiamethoxam	10	0.032	24	1	0.034	37
TOTAL INSECTICIDE	56		656	22		2,978

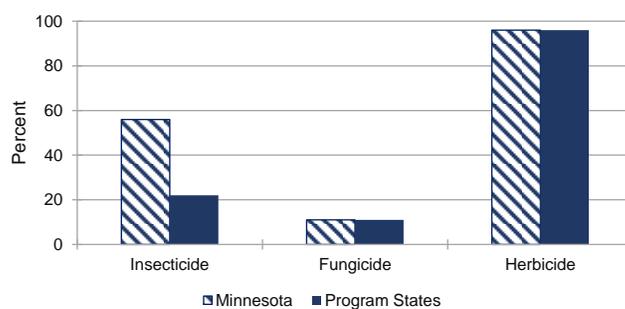
(Z) Less than half the rounding unit.

<sup>1</sup> The 19 program states surveyed about soybeans in the 2015 ARMS were Arkansas, Illinois, Indiana, Minnesota, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, South Dakota, Tennessee, Virginia and Wisconsin.

**Fertilizers: Percent of Soybean Planted Acres Treated - Minnesota**



**Pesticides: Percent of Soybean Planted Acres Treated - Minnesota**



**Pest Management Practices:** Scouting for weeds was the top pest management practice on soybean acreage in Minnesota.

Pest Management Practices	Minnesota		Program States <sup>1</sup>	
	% of area planted	% of operations	% of area planted	% of operations
<b>Avoidance</b>				
Crop or plant variety chosen for specific pest resistance	52	50	49	47
Planting locations planned to avoid cross infestation of pests	24	22	17	16
Planting or harvesting dates adjusted	19	21	20	21
Rotated crops during past 3 years	95	96	90	87
Row spacing, plant density, or row directions adjusted	21	19	22	22
<b>Monitoring</b>				
Diagnostic laboratory services used for pest detection via soil or plant tissue analysis	10	7	7	6
Field mapping data used to assist decisions	25	19	14	12
Scouted -				
-established process used	31	28	23	19
-for pests due to a pest advisory warning	19	17	12	10
-for pests due to a pest development model	14	12	10	8
-for pests or beneficial organisms-not scouted	3	4	5	7
-for pests or beneficial organism by conducting gen. observations while performing routine tasks	13	14	26	29
-for pests or beneficial organism by deliberately going to the crop acres or growing areas	84	82	69	64
Scouted for diseases	88	81	81	77
-by employee	1	1	2	2
-by farm supply company or chemical dealer	15	17	13	14
-by independent crop consultant or commercial scout	12	9	14	11
-by operator, partner, or family member	71	73	71	73
Scouted for insects & mites	96	94	85	80
-by employee	1	1	1	1
-by farm supply company or chemical dealer	15	15	13	14
-by independent crop consultant or commercial scout	12	9	14	11
-by operator, partner, or family member	73	75	71	73
Scouted for weeds	97	94	94	92
-by employee	1	1	1	1
-by farm supply company or chemical dealer	14	14	12	13
-by independent crop consultant or commercial scout	12	9	13	10
-by operator, partner, employee, or family member	74	76	74	77
Weather data used to assist decisions	66	61	59	56
Written or electronic records kept to track pest activity	41	36	31	26
<b>Prevention</b>				
Beneficial insect or vertebrate habitat maintained	11	9	10	9
Crop residues removed or burned down	5	3	11	14
Equipment & implements cleaned after field work to reduce spread of pests	59	58	40	39
Field edges, ditches, or fence lines were chopped, sprayed, mowed, plowed, or burned	62	59	56	52
Field left fallow previous year to manage insects	1	1	1	1
Flamer used to kill weeds	2	2	1	(Z)
No-till or minimum till used	55	55	74	75
Plowed down crop residue using conventional tillage	42	41	25	25
Seed treated for insect or disease control after purchase	42	46	41	34
Water management practices used	3	2	4	3
<b>Suppression</b>				
Beneficial organisms applied or released	1	1	1	1
Biological pesticides applied	4	3	4	4
Buffer strips or border rows maintained to isolate organic from non-organic crops	5	5	5	6
Floral lures, attractants, repellants, pheromone traps, or biological pest controls used	0	0	(Z)	(Z)
Ground covers, mulches, or other physical barriers maintained	49	47	44	43
Pesticides with different mechanisms of actions to keep pest from becoming resistant to pesticides	31	26	33	29
Scouting data compared to published information to assist decisions	41	38	26	23
Trap crop grown to manage insects	(Z)	1	(Z)	(Z)

(Z) Less than half the rounding unit.

<sup>1</sup> The 13 program states surveyed about oats in the 2015 ARMS were Illinois, Iowa, Kansas, Michigan, Minnesota, Nebraska, New York, North Dakota, Ohio, Pennsylvania, South Dakota, Texas and Wisconsin.