United States Department of Agriculture
National Agricultural Statistics Service

Minnesota Ag News – Chemical Use

Soybeans: Fall 2017

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The 2017 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_2O_5), and potash (K_2O). 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 34 percent of planted acres at an average rate of 59 pounds per acre per year. Macronutrients nitrogen and phosphate were applied to 26 and 28 percent of soybean acres, at an average rate of 16 and 59 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).

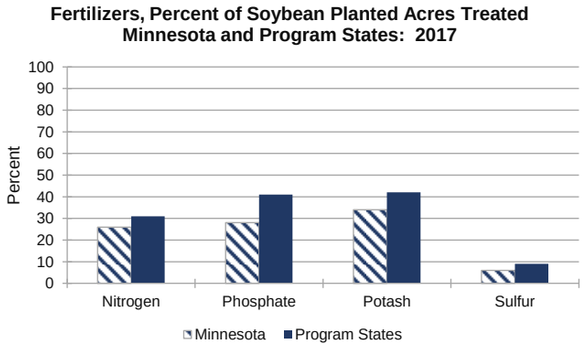
Herbicide active ingredients were applied to 94 percent of the soybeans planted. Fomesafen sodium and sulfentrazone were the most widely used pesticides overall, however glyphosate potassium salt was the active ingredient with the greatest total amount applied. Fungicide and insecticide active ingredients were applied to 13 and 38 percent, respectively, of soybean acres planted in Minnesota.

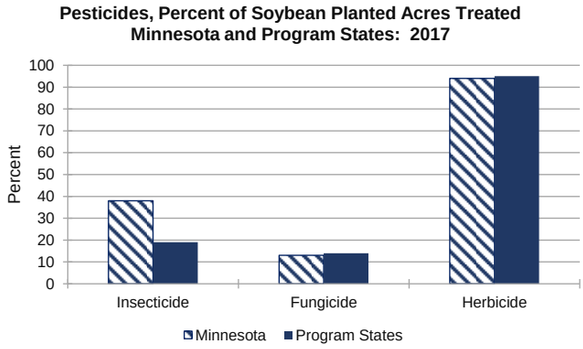
	Minnesota			Program States [1]		
	Planted acres treated (%)	Rate applied per year (pounds per acre)	Total pounds applied (1,000 pounds)	Planted acres treated (%)	Rate applied per year (pounds per acre)	Total pounds applied (1,000 pounds)
Fertilizer Use on Soybeans						
Nitrogen	26	16	35,200	31	18	468,300
Phosphate	28	41	95,000	41	52	1,771,200
Potash	34	59	161,000	42	91	3,207,900
Sulfur	6	10	5,100	9	15	112,200
Pesticide Use on Soybeans by Active Ingredient						
FUNGICIDE:						
Azoxystrobin	5	0.086	32	4	0.102	347
Fluxapyroxad	7	0.067	36	5	0.055	215
Propiconazole	4	0.104	31	3	0.095	212
Pyraclostrobin	7	0.142	81	5	0.121	552
TOTAL FUNGICIDE[2]	13		203	14		1,937
HERBICIDE:						
Acetochlor	3	0.683	157	3	1.114	3,213
Chlorimuron-Ethyl	5	0.026	10	12	0.020	209
Clethodim	14	0.069	76	11	0.100	915
Cloransulam-Methyl	23	0.028	53	9	0.026	188
Dicamba, Digly. Salt	6	0.671	324	7	0.612	3,729
Dimethenamid-P	5	0.759	296	5	0.451	1,905
Fluazifop-P-Butyl	6	0.090	46	3	0.109	255
Flumioxazin	7	0.074	40	13	0.074	806
Fluthiacet-Methyl	2	0.004	1	3	0.005	12
Fomesafen Sodium	34	0.222	612	19	0.240	3,858
Glufosinate-Ammonium	10	0.514	406	13	0.587	6,424
Glyphosate	23	0.926	1,717	8	0.923	6,266
Glyphosate Dim. Salt	4	1.463	467	2	1.502	2,693
Glyphosate Iso. Salt	27	0.873	1,892	46	1.145	44,232
Glyphosate Pot. Salt	26	1.838	3,910	30	1.590	40,318
Imazethapyr	4	0.041	13	8	0.047	328
Metribuzin	7	0.220	125	18	0.256	3,726
Pyroxasulfone	8	1.105	72	10	0.125	1,034
S-Metolachlor	9	1.360	993	16	1.214	15,911
Saflufenacil	3	0.018	4	8	0.028	184
Sulfentrazone	34	0.167	465	22	0.179	3,309
Trifluralin	4	0.854	255	2	0.887	1,201
TOTAL HERBICIDE[2]	94		12,240	95		161,144
INSECTICIDE:						
Bifenthrin	2	0.055	8	5	0.064	247
Chlorpyrifos	17	0.352	484	3	0.350	876
Lambda-Cyhalothrin	24	0.027	52	8	0.031	215
Thiamethoxam	7	0.034	19	1	0.036	44
TOTAL INSECTICIDE[2]	38		577	19		2,735

(Z) Less than half the rounding unit.

[1] The 16 program states surveyed about soybeans in the 2017 ARMS were Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, South Dakota, and Wisconsin.

[2] Total Fungicide, Herbicide, and Insecticide includes pesticides that are not listed in this table. Pesticides were not listed if data were withheld to avoid disclosing data for individual operations, or the total was less than half the rounding unit.





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

Pest Management Practices	Minnesota		Program States [1]	
	% of area planted	% of operations	% of area planted	% of operations
Avoidance				
Crop or plant variety chosen for specific pest resistance	53	50	52	51
Planting locations planned to avoid cross infestation of pests	18	18	18	17
Planting or harvesting dates adjusted	15	15	19	18
Rotated crops during past 3 years	95	94	88	87
Row spacing, plant density, or row directions adjusted	19	19	20	19
Monitoring				
Diagnostic laboratory services used for pest detection via soil or plant tissue analysis	12	8	8	7
Field mapping data used to assist decisions	24	21	16	14
Scouted -				
-established process used	41	37	21	19
-for pests due to a pest advisory warning	20	17	12	11
-for pests due to a pest development model	16	14	8	7
-for pests or beneficial organisms-not scouted	1	1	4	5
-for pests or beneficial organism by conducting gen. observations while performing routine tasks	14	19	26	30
-for pests or beneficial organism by deliberately going to the crop acres or growing areas	85	80	70	65
Scouted for diseases	89	83	85	80
-by employee	3	3	3	2
-by farm supply company or chemical dealer	13	16	11	13
-by independent crop consultant or commercial scout	17	13	15	11
-by operator, partner, or family member	67	68	71	74
Scouted for insects & mites	97	95	88	83
-by employee	3	2	3	2
-by farm supply company or chemical dealer	13	15	11	13
-by independent crop consultant or commercial scout	16	12	14	11
-by operator, partner, or family member	69	71	72	75
Scouted for weeds	99	99	95	94
-by employee	2	2	2	2
-by farm supply company or chemical dealer	11	13	10	11
-by independent crop consultant or commercial scout	16	12	13	9
-by operator, partner, employee, or family member	70	73	74	78
Weather data used to assist decisions	76	73	67	66
Written or electronic records kept to track pest activity	54	46	35	30
Prevention				
Beneficial insect or vertebrate habitat maintained	12	11	9	9
Crop residues removed or burned down	6	9	13	14
Equipment & implements cleaned after field work to reduce spread of pests	54	53	41	40
Field edges, ditches, or fence lines were chopped, sprayed, mowed, plowed, or burned	58	56	53	50
Field left fallow previous year to manage insects	0	0	1	1
Flamer used to kill weeds	1	(Z)	(Z)	1
No-till or minimum till used	48	47	72	73
Plowed down crop residue using conventional tillage	38	38	24	24
Seed treated for insect or disease control after purchase	41	36	45	40
Water management practices used	11	10	6	6
Suppression				
Beneficial organisms applied or released	2	1	1	1
Biological pesticides applied	3	2	5	5
Buffer strips or border rows maintained to isolate organic from non-organic crops	13	13	7	7
Floral lures, attractants, repellants, pheromone traps, or biological pest controls used	1	1	(Z)	1
Ground covers, mulches, or other physical barriers maintained	32	33	42	40
Pesticides with different mechanisms of actions to keep pest from becoming resistant to pesticides	27	25	37	35
Scouting data compared to published information to assist decisions	45	36	26	23
Trap crop grown to manage insects	(Z)	1	(Z)	(Z)

(Z) Less than half the rounding unit.

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Complete data from the Agricultural Chemical Use survey are available on the NASS website at
http://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Chemical_Use/