



Iowa Ag News – Chemical Use

Soybeans: Fall 2023



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Cooperating with the Iowa Department of Agriculture and Land Stewardship

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The National Agricultural Statistics Service (NASS) Agricultural Chemical Use Program is the U.S. Department of Agriculture's official source of statistics about on-farm and post-harvest fertilizer and pesticide use and pest management practices.

In the fall of 2023, NASS collected data for the 2023 crop year, the one-year period beginning after the 2022 harvest and ending with the 2023 harvest, about chemical use and pest management practices used on soybean production. The data was collected as part of the Agricultural Resource Management Survey (ARMS) and the results are presented here.

Fertilizer Use: Of the three primary macronutrients, potash was the most widely used on soybean acres planted in Iowa. Farmers applied potash to 45 percent of planted acres at an average rate of 106 pounds per acre per year. Macronutrients nitrogen and phosphate were applied at an average rate of 33 and 73 pounds per acre per year, respectively. The secondary macronutrient, sulfur, was applied to 11 percent of acres planted to soybeans.

Pesticide Use: Herbicide active ingredients were applied to 95 percent of the soybean acres planted. 2, 4-D, choline salt was the most widely used pesticide on soybean acres, and was also the active ingredient with the greatest total amount applied. Fungicides and insecticides were applied to 33 and 29 percent of soybean acres planted in Iowa, respectively.

Pesticide Use on Soybeans – Iowa and Program States: 2023

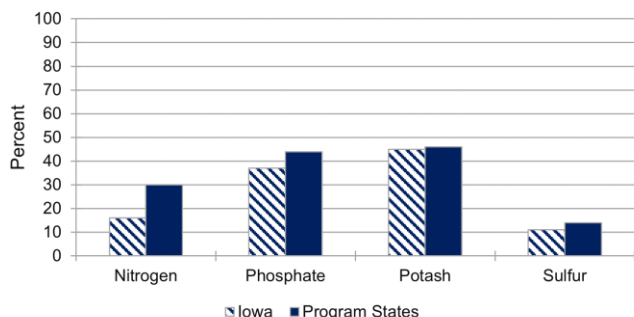
Active ingredient	Iowa			Program states ¹		
	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)	Planted acres treated (percent)	Yearly rate (lbs per acre)	Total applied (1,000 lbs)
Fungicide³						
Azoxystrobin	11	0.105	117	6	0.100	454
Propiconazole	16	0.109	178	8	0.108	669
Total ²	33		674	21		3,678
Herbicide³						
2, 4-D, 2-EHE	17	0.858	1,466	15	0.860	10,246
2, 4-D, choline salt	65	0.675	4,399	37	0.713	21,406
Clethodim	30	0.134	394	16	0.161	2,029
Cloransulam-methyl	10	0.021	20	6	0.021	92
Dicamba, digly. salt	10	0.537	543	12	0.586	5,576
Glufosinate-ammonium	17	0.578	992	23	0.526	9,703
Glyphosate	12	1.419	1,723	10	1.361	10,852
Glyphosate dim. salt	44	0.516	2,257	25	0.559	11,056
Glyphosate iso. salt	37	0.955	3,475	46	1.106	41,158
Glyphosate pot. salt	17	1.107	1,876	22	1.407	24,723
Imazethapyr	14	0.048	68	8	0.054	367
Metribuzin	19	0.216	413	16	0.241	3,135
Pyroxasulfone	26	0.107	280	17	0.128	1,737
S-Metolachlor	20	1.449	2,837	20	1.320	20,909
Sulfentrazone	25	0.201	503	19	0.209	3,130
Total ²	95		24,169	96		196,352
Insecticide³						
Bifenthrin	13	0.050	64	7	0.061	342
Lambda-cyhalothrin	11	0.032	33	10	0.028	226
Total ²	29		153	22		1,987

¹ The 19 program states surveyed about soybeans in the 2023 ARMS were Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, South Dakota, Tennessee, Virginia, and Wisconsin.

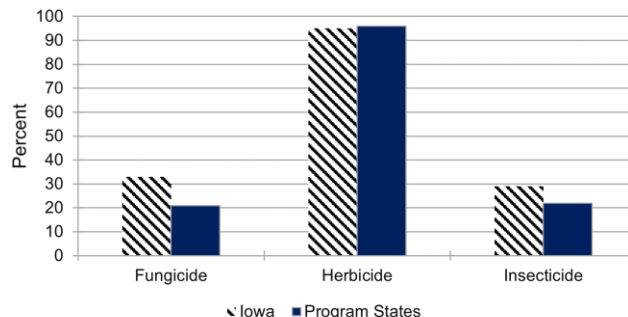
² Total Fungicide, Herbicide, and Insecticide include pesticides not listed in the table.

³ Given the large number of pesticides applied to row crops, active ingredients applied to less than 10 percent of planted acres in Iowa are not included in this table but can be found at www.nass.usda.gov.

Fertilizers, Percent of Soybean Planted Acres Treated
Iowa and Program States: 2023



Pesticides, Percent of Soybean Planted Acres Treated
Iowa and Program States: 2023



Fertilizer Use on Soybeans – Iowa and Program States: 2023

Active ingredient	Iowa			Program states ¹		
	Planted acres treated	Yearly rate	Total applied	Planted acres treated	Yearly rate	Total applied
	(percent)	(lbs per acre)	(1,000 lbs)	(percent)	(lbs per acre)	(1,000 lbs)
Nitrogen	16	33	51,900	30	22	537,000
Phosphate	37	73	269,700	44	57	2,041,600
Potash	45	106	480,700	46	88	3,287,000
Sulfur	11	23	25,200	14	20	230,800

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Crop rotation was the top pest management practice on soybean acreage in Iowa.

Pest Management Practices on Soybeans – Iowa and Program States: 2023

	Iowa		Program states	
	% of area planted	% of operations	% of area planted	% of operations
Avoidance				
Crop or plant variety chosen for specific pest resistance	47	53	54	55
Planting locations planned to avoid cross infestation of pests	10	10	14	13
Planting or harvesting dates adjusted	10	11	13	15
Rotated crops during past 3 years	87	86	81	78
Row spacing, plant density, or row directions adjusted	13	13	19	19
Monitoring				
Diagnostic laboratory services used for pest detection via soil or plant tissue analysis	2	2	7	6
Field mapping data used to assist decisions	13	12	13	11
Scouted -				
established process used	12	12	17	14
for pests due to a pest advisory warning	12	12	11	10
for pests due to a pest development model	9	7	9	7
for pests or beneficial organisms-not scouted	13	14	8	10
for pests or beneficial organism by conducting general observations while performing routine tasks	34	32	30	31
for pests or beneficial organism by deliberately going to the crop acres or growing areas	53	54	62	59
Weather data used to assist decisions	45	42	61	59
Written or electronic records kept to track pest activity	30	28	40	34
Prevention				
Beneficial insect or vertebrate habitat maintained	7	8	8	6
Crop residues removed or burned down	2	5	12	15
Equipment and implements cleaned after field work to reduce spread of pests	34	33	42	39
Field edges, ditches, or fence lines chopped, sprayed, mowed, plowed, or burned	51	50	51	48
Field left fallow previous year to manage insects	0	0	1	1
Flamer used to kill weeds	(Z)	(Z)	1	1
No-till or minimum-till used	70	71	62	61
Plowed down crop residue using conventional tillage	9	10	17	19
Seed treated for insect or disease control after purchase	42	44	32	28
Water management practices used	0	0	3	2
Suppression				
Beneficial organisms applied or released	2	2	1	1
Biological pesticides applied	5	3	3	3
Buffer strips or border rows maintained to isolate organic from non-organic crops	4	5	5	5
Floral lures, attractants, repellants, pheromone traps, or biological pest controls used	1	1	(Z)	(Z)
Ground covers, mulches, or other physical barriers maintained	37	39	37	34
Pesticides with different mechanisms of action to keep pest from becoming resistant to pesticides	46	44	40	38
Scouting data compared to published information to assist decisions	21	17	22	18
Trap crop grown to manage insects	0	0	1	(Z)

(Z) Less than half of the unit shown.

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More information and data for the USDA NASS Chemical Use Program can be found at:

https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Chemical_Use/.