2018 AGRICULTURAL CHEMICAL USE SURVEY
Soybeans

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. . . accounted for 96 percent of U.S. acres planted to soybeans in 2018.

About the Survey

The Agricultural Chemical Use Program of USDA's National Agricultural Statistics Service (NASS) is the federal government's official source of statistics about on-farm and post-harvest commercial fertilizer and pesticide use and pest management practices. NASS conducts field crop agricultural chemical use surveys in cooperation with USDA's Economic Research Service as part of the Agricultural Resource Management Survey. NASS conducted the soybean chemical use survey in the fall of 2018.
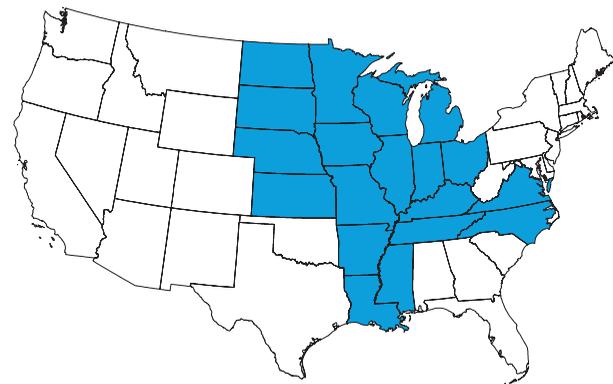
Access the Data

Access 2018 and earlier soybean chemical use data through the Quick Stats database (https://quickstats.nass.usda.gov/).
- In Program, select "Survey"
- In Sector, select "Environmental"
- In Group, select "Field Crops"
- In Commodity, select "Soybeans"
- Select your category, data item, geographic level, and year

For pre-defined Quick Stats queries, go to http://bit.ly/AgChem and click "Data Tables" under the 2018 Corn, Peanut, and Soybean heading. For methodology information, click "Methodology."

The 2018 Agricultural Chemical Use Survey of soybean producers collected data about fertilizer and pesticide use as well as pest management practices in growing soybeans. NASS conducted the survey in 19 states that accounted for 96 percent of the 89.2 million acres planted to soybeans in the United States in 2018: Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, South Dakota, Tennessee, Virginia, and Wisconsin. (Fig. 1 and box on p. 2)

Data are for the 2018 crop year, the one-year period beginning after the 2017 harvest and ending after the 2018 harvest.

Fig. 1. States in the 2018 Soybean Chemical Use Survey

Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients. For the 2018 crop year, farmers applied nitrogen to 29 percent of soybean planted acres, at an average rate of 17 pounds per acre, for a total of 416.4 million pounds. (Table 1)

Table 1. Fertilizer Applied to Soybean Planted Acres, 2018 Crop Year

	% of Acres with Nutrient[a]	Average Rate (lbs/acre)	Total Applied (mil lbs)
Nitrogen (N)	29	17	416.4
Phosphate (P_2O_5)	42	55	1,974.3
Potash (K_2O)	43	87	3,221.4
Sulfur (S)	10	13	111.5

[a]*Acres with multiple nutrients are counted in each category.*

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). Herbicides were used most extensively, applied to 99 percent of planted acres. Insecticides were applied to 16 percent of planted acres, fungicides to 15 percent. (Fig. 2)

Among herbicides, glyphosate isopropylamine salt was the most widely used active ingredient (applied to 47 percent of planted acres), followed by glyphosate potassium salt (28 percent) (Table 2). These were also the most widely applied active ingredients in the 2015 and 2017 surveys of soybean producers.

Fig. 2. Pesticides Applied to Soybean Planted Acres, 2018 Crop Year
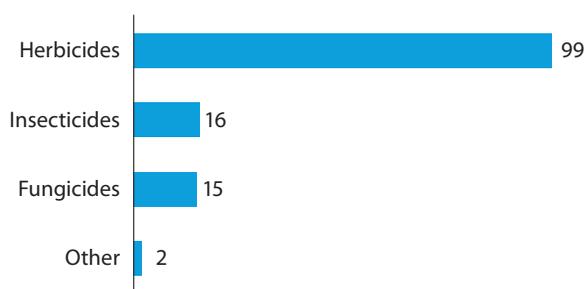(% of planted acres)

Herbicides	99
Insecticides	16
Fungicides	15
Other	2

Table 2. Top Herbicides Applied to Soybean Planted Acres, 2018 Crop Year

Active Ingredient	% of Acres with Ingredient[a]	Average Rate (lbs/acre)	Total Applied (mil lbs)
Glyphosate isopropylamine salt	47	1.202[b]	48.3[b]
Glyphosate potassium salt	28	1.527[b]	36.7[b]
Sulfentrazone	20	0.195	3.3
Metribuzin	19	0.270	4.4
Fomesafen sodium	18	0.234	3.6

[a]Acres with multiple ingredients are counted in each category.
[b]Expressed in acid equivalent.

Pest Management Practices

The survey asked growers to report on the practices they used to manage pests, defined as weeds, insects, or diseases. Soybean growers reported practices in four categories: prevention, avoidance, monitoring, and suppression (PAMS).

- *Prevention* practices involve actions to keep a pest population from infesting a crop or field.
- *Avoidance* practices use cultural measures to mitigate or eliminate the detrimental effects of pests.
- *Monitoring* practices observe or detect pests by systematic sampling, counting, or other forms of scouting.
- *Suppression* practices involve controlling or reducing existing pest populations to mitigate crop damage.

Table 3 shows the top practice in each category. For example, the most widely used prevention practice in growing soybeans in 2018 was no till or minimum till.

Table 3. Top Practice in Pest Management Category, 2018
(% of soybean planted acres)

Prevention: Used no till or minimum till	64
Avoidance: Rotated crops during past three years	77
Monitoring: Scouted for weeds (deliberately, or by general observations while performing tasks)	94
Suppression: Used pesticides with different mechanisms of action	40

Surveyed States: Acres of Soybeans Planted, 2018

	millions of acres	% of U.S.
U.S. Total	89.2	100
Illinois	10.8	12.1
Iowa	10.0	11.2
Minnesota	7.8	8.7
North Dakota	6.9	7.7
Indiana	6.0	6.7
Missouri	5.9	6.6
Nebraska	5.7	6.4
South Dakota	5.7	6.3
Ohio	5.0	5.6
Kansas	4.8	5.3
Arkansas	3.3	3.7
Michigan	2.3	2.6
Mississippi	2.2	2.5
Wisconsin	2.2	2.5
Kentucky	2.0	2.2
Tennessee	1.7	1.9
North Carolina	1.7	1.8
Louisiana	1.3	1.5
Virginia	0.6	0.7
Total, Surveyed States	**85.7**	**96.1**

Numbers may not add due to rounding.