2017 AGRICULTURAL CHEMICAL USE SURVEY

Soybeans

Sixteen states . . .

. . . accounted for 92 percent of U.S. acres planted to soybeans in 2017.

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 as part of the Agricultural Resource Management Survey. NASS conducted the soybean chemical use survey in the fall of 2017.

Access the Data

Access 2017 soybean chemical use data, as well as results from prior surveys of soybean chemical use, through the Quick Stats 2.0 database (http://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 2017 Cotton, Soybeans, and Wheat heading. For methodology information, click "Methodology."

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. NASS conducted the survey in 16 states that accounted for 92 percent of the 90.1 million acres planted to soybeans in the United States in 2017: Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, South Dakota, and Wisconsin. (Fig. 1 and box on p. 2)

Data are for the 2017 crop year, the one-year period beginning after the 2016 harvest and ending after the 2017 harvest.

Fig. 1. States in the 2017 Soybean Chemical Use Survey
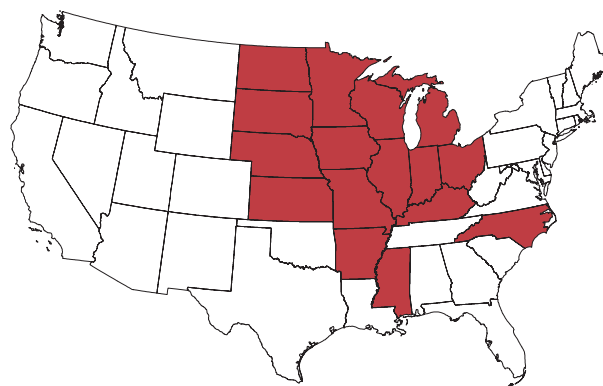
Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients. For the 2017 crop year, farmers applied nitrogen to 31 percent of planted acres, at an average rate of 18 pounds per acre, for a total of 468.3 million pounds. They applied phosphate to 41 percent of soybean planted acres and potash to 42 percent of acres. (Table 1)

Table 1. Fertilizer Applied to Soybean Planted Acres, 2017 Crop Year

	% of Planted Acres	Avg. Rate for Year (lbs/acre)	Total Applied (mil lbs)
Nitrogen (N)	31	18	468.3
Phosphate (P_2O_5)	41	52	1,771.2
Potash (K_2O)	42	91	3,207.9

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 95 percent of planted acres. Insecticides and fungicides were applied to 19 and 14 percent of planted acres, respectively. (Fig. 2)

Among herbicides, two different forms of glyphosate were the most widely applied active ingredients (Table 2). They were also the top herbicides in a similar survey in 2015.

Fig. 2. Pesticides Applied to Soybean Planted Acres, 2017 Crop Year
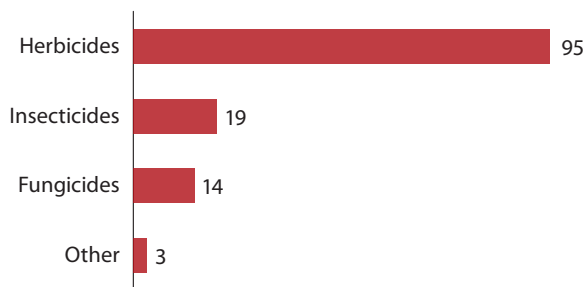(% of planted acres)

Table 2. Top Herbicides Applied to Soybean Planted Acres, 2017 Crop Year

Active Ingredient	% of Planted Acres	Avg. Rate for Year (lbs/acre)	Total Applied (mil lbs)
Glyphosate isopropylamine salt	46	1.145[a]	44.2[a]
Glyphosate potassium salt	30	1.590[a]	40.3[a]
Sulfentrazone	22	0.179	3.3
Fomesafen sodium	19	0.240[a]	3.9[a]
Metribuzin	18	0.256	3.7

[a]*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.

The most widely used prevention practice in growing soybeans was no-till or minimum till, used on 72 percent of planted acres. The top avoidance practice was rotating crops (88 percent). Scouting for weeds was the most widely used monitoring practice (95 percent), and maintaining ground cover, mulching, or using other physical barriers was the top suppression practice (42 percent). (Table 3)

Table 3. Top Practice in Pest Management Category, 2017
(% of soybean planted acres)

Prevention: Used no-till or minimum till	72
Avoidance: Rotated crops during past three years	88
Monitoring: Scouted for weeds (deliberately, or by general observations while performing tasks)	95
Suppression: Maintained ground covers, mulches, or other physical barriers	42

Surveyed States: Acres of Soybeans Planted, 2017

U.S. Total	millions of acres 90.1	% of U.S. 100
Illinois	10.6	11.7
Iowa	10.0	11.0
Minnesota	8.2	9.0
North Dakota	7.1	7.8
Indiana	6.0	6.6
Missouri	6.0	6.6
Nebraska	5.7	6.3
South Dakota	5.7	6.2
Kansas	5.2	5.7
Ohio	5.1	5.6
Arkansas	3.5	3.9
Michigan	2.3	2.5
Mississippi	2.2	2.4
Wisconsin	2.2	2.3
Kentucky	2.0	2.1
North Carolina	1.7	1.8
Total, Surveyed States	**83.5**	**91.5**

Numbers may not add due to rounding.