

## 2021 AGRICULTURAL CHEMICAL USE SURVEY

# Rice

### Six states...

... accounted for 100% of U.S. acres planted to rice in 2021.

### 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 rice chemical use survey in the fall of 2021.

### Access the Data

Access 2021 and earlier rice chemical use data through the Quick Stats database (<http://quickstats.nass.usda.gov>).

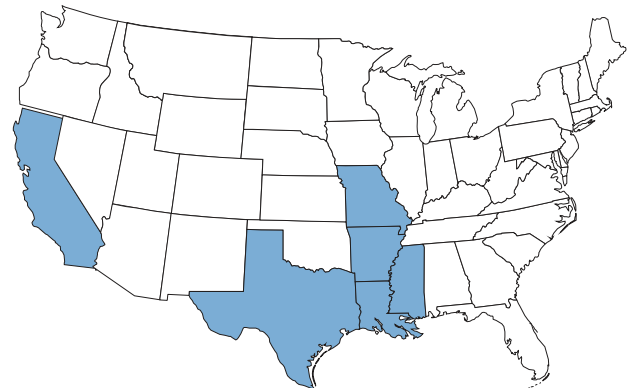
- In Program, select "Survey"
- In Sector, select "Environmental"
- In Group, select "Field Crops"
- In Commodity, select "Rice"
- Select your category, data item, geographic level, and year

For pre-defined Quick Stats queries, go to <http://bit.ly/AgChem> and click "Data Tables" under the 2021 Corn, Cotton, and Rice heading. For methodology information, click "Methodology."

The 2021 Agricultural Chemical Use Survey of rice producers collected data about fertilizer and pesticide use as well as pest management practices for rice production. NASS conducted the survey among rice producers in six states that together accounted for 100% of the 2.5 million acres planted to rice in the United States in 2021: Arkansas, California, Louisiana, Mississippi, Missouri, and Texas. (Fig. 1)

The data are for the 2021 crop year, the one-year period beginning after the 2020 harvest and ending with the 2021 harvest. (Table 4)

**Fig. 1. States in the 2021 Rice Chemical Use Survey**



## Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients. For the 2021 crop year, farmers applied nitrogen to 92% of planted acres, at an average rate of 180 pounds per acre, for a total of 421.2 million pounds. They applied phosphate to 74% of planted acres, at an average rate of 84 pounds per acre. (Table 1)

**Table 1. Fertilizer Applied to Rice Planted Acres, 2021 Crop Year**

	% of Acres with Nutrient <sup>a</sup>	Average Rate (lbs/acre)	Total Applied (mil lbs)
Nitrogen (N)	92	180	421.2
Phosphate (P <sub>2</sub> O <sub>5</sub> )	74	84	157.9
Potash (K <sub>2</sub> O)	57	71	103.3
Sulfur (S)	22	32	17.8

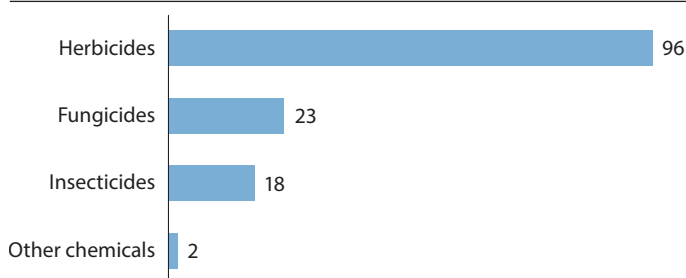
<sup>a</sup> Acres with multiple nutrients are counted in each category.

## Pesticide Use

The pesticide active ingredients used on rice 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 96% of planted acres. Fungicides were applied to 23% of planted acres. (Fig. 2)

Among herbicides, clomazone was the most widely used active ingredient (applied to 61% of planted acres), followed by glyphosate isopropylamine salt (24%). Propanil was applied to 21% of the planted acres. (Table 2)

**Fig. 2. Pesticides Applied to Rice Planted Acres, 2021 Crop Year**  
(% of planted acres)



**Table 2. Top Herbicides Applied to Rice Planted Acres, 2021 Crop Year**

Active Ingredient	% of Acres with Ingredient <sup>a</sup>	Average Rate (lbs/acre)	Total Applied (lbs)
Clomazone	61	0.505	783,000
Glyphosate isopropylamine salt	24	1.227 <sup>b</sup>	760,000 <sup>b</sup>
Propanil	21	4.482	2,403,000
Imazethapyr ammonium salt	19	0.099 <sup>b</sup>	48,000 <sup>b</sup>
Halosulfuron	18	0.361	162,000

<sup>a</sup> Acres with multiple ingredients are counted in each category.

<sup>b</sup> 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. Rice growers reported practices in four categories: prevention, avoidance, monitoring, and suppression.

- *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 rice was chopping, spraying, mowing, plowing or burning field edges, ditches or fence lines, used on 76% of planted acres. The top avoidance practice was rotating crops (61%). Scouting for weeds was the most widely used monitoring practice (95%) and using pesticides with different mechanisms of action was the top suppression practice (43%). (Table 3)

**Table 3. Top Practice in Pest Management Category, 2021**  
(% of rice planted acres)

<i>Prevention</i> : Chopped, sprayed, mowed, plowed, or burned field edges, ditches or fence lines	76
<i>Avoidance</i> : Rotated crops during last three years	61
<i>Monitoring</i> : Scouting for weeds (deliberately, or by general observations while performing tasks)	95
<i>Suppression</i> : Used pesticides with different mechanisms of action to keep pests from becoming resistant to pesticides	43

**Table 4. U.S. and Surveyed States: Acres of Rice Planted, 2021**

U.S. Total	Thousands of Acres	% of U.S.
	2,532	100
Arkansas	1,211	47.8
Louisiana	420	16.6
California	407	16.1
Missouri	199	7.9
Texas	190	7.5
Mississippi	105	4.1
<b>Total, Surveyed States</b>	<b>2,532</b>	<b>100.0</b>