

## 2023 AGRICULTURAL CHEMICAL USE SURVEY

# Barley

### Fourteen states . . .

. . . accounted for 95.6% of the U.S. acres planted to barley in 2023.

### 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 barley chemical use survey in the fall of 2023.

### Access the Data

Access 2023 and earlier barley chemical use data through the Quick Stats database

<http://quickstats.nass.usda.gov>.

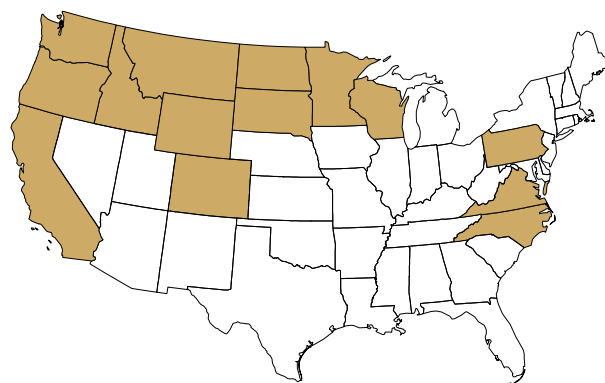
- In Program, select "Survey"
- In Sector, select "Environmental"
- In Group, select "Field Crops"
- In Commodity, select "Barley"
- Select your category, data item, geographic level, and year

For pre-defined Quick Stats queries, go to <http://bit.ly/AgChem> and click "Data Tables" under the 2023 Barley, Oats, Peanuts, and Soybeans heading. For methodology information, go to <http://bit.ly/AgChem> and click "Methodology."

The 2023 Agricultural Chemical Use Survey of barley producers collected data about fertilizer and pesticide use as well as pest management practices in growing barley. NASS conducted the survey among barley producers in 14 states that together accounted for 95.6% of the 3.1 million acres planted to barley in the United States in 2023: California, Colorado, Idaho, Minnesota, Montana, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Virginia, Washington, Wisconsin, and Wyoming. (Fig. 1 and Table 4)

The data are for the 2023 crop year, the one-year period beginning after the 2022 harvest and ending with the 2023 harvest.

**Fig. 1. States in the 2023 Barley Chemical Use Survey**



## Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients. For the 2023 crop year, farmers applied nitrogen to 90% of acres planted to barley, at an average rate of 68 pounds per acre, for a total of 182.4 million pounds. They applied phosphate to 74% of barley planted acres and potash to 38% of acres. (Table 1)

**Table 1. Fertilizer Applied to Barley Planted Acres, 2023 Crop Year**

	% of Acres with Nutrient <sup>a</sup>	Avg. Rate for Year (lbs/acre)	Total Applied (mil lbs)
Nitrogen (N)	90	68	182.4
Phosphate (P <sub>2</sub> O <sub>5</sub> )	74	36	78.6
Potash (K <sub>2</sub> O)	38	26	29.0
Sulfur (S)	44	16	20.5

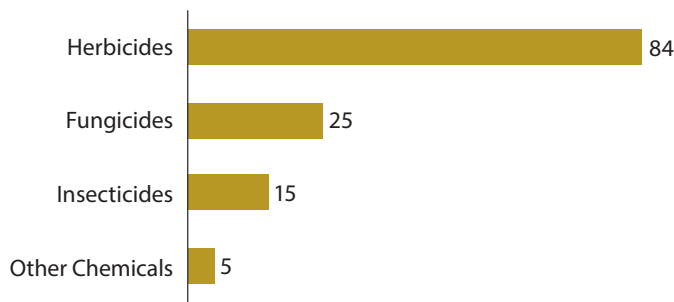
<sup>a</sup> Acres with multiple nutrients are counted in each category.

## Pesticide Use

The pesticide active ingredients used on barley 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 84% of planted acres. Fungicides were applied to 25% of the acres, insecticides to 15% and other chemicals to 5%. (Fig. 2)

Among herbicides, bromoxynil octanoate was the most widely used active ingredient (applied to 38% of planted acres), followed by fluroxypyr 1-MHE (35%) and pinoxaden (28%). (Table 2)

**Fig. 2. Pesticides Applied to Barley Planted Acres, 2023 Crop Year**  
(% of planted acres)



**Table 2. Top Herbicides Applied to Barley Planted Acres, 2023 Crop Year**

Active Ingredient	% of Acres with Ingredient <sup>a</sup>	Avg. Rate (lbs/acre)	Total Applied (lbs)
Bromoxynil octanoate	38	0.161	179,000
Fluroxypyr 1-MHE	35	0.094	98,000
Pinoxaden	28	0.051	42,000
Bromoxynil heptanoate	25	0.096	70,000
Pyrasulfotole	23	0.032	22,000

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

## Pest Management Practices

The survey asked growers to report on the practices they used to manage pests, defined as weeds, insects, or diseases. Barley 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 pest prevention practice was equipment and implements cleaned after field work to reduce the spread of pests (65%). The top avoidance practice was rotating crops (84%). Scouting for diseases was the most widely used monitoring practice (92%), and maintaining ground cover, mulching, or using other physical barriers was the top suppression practice (54%). (Table 3)

**Table 3. Top Practice in Pest Management Category, 2023**  
(% of barley planted acres)

<i>Prevention</i> : Cleaned equipment and implements after field work	65
<i>Avoidance</i> : Rotated crops during past three years	84
<i>Monitoring</i> : Scouted for weeds (deliberately, or by general observations while performing other tasks)	92
<i>Suppression</i> : Maintained ground covers, mulches, or other physical barriers	54

**Table 4. Surveyed States: Acres of Barley Planted, 2023**

	thousands of acres	% of U.S.
<b>U.S. Total</b>	<b>3,101.0</b>	<b>100</b>
Montana	1,190	38.4
North Dakota	690	22.3
Idaho	570	18.4
Washington	95	3.1
Wyoming	83	2.7
Minnesota	60	1.9
Colorado	54	1.7
Pennsylvania	47	1.5
Oregon	41	1.3
California	40	1.3
South Dakota	38	1.2
Virginia	30	1.0
North Carolina	16	0.5
Wisconsin	12	0.4
<b>Total, Surveyed States</b>	<b>2,966</b>	<b>95.6</b>