



2020 AGRICULTURAL CHEMICAL USE

Vegetable Crops

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 agricultural chemical use surveys as part of the Agricultural Resource Management Survey. NASS conducted the vegetable chemical use survey in fall 2020.

Access the Data

Access 2020 and earlier vegetable chemical use data through the Quick Stats database (<http://quickstats.nass.usda.gov>).

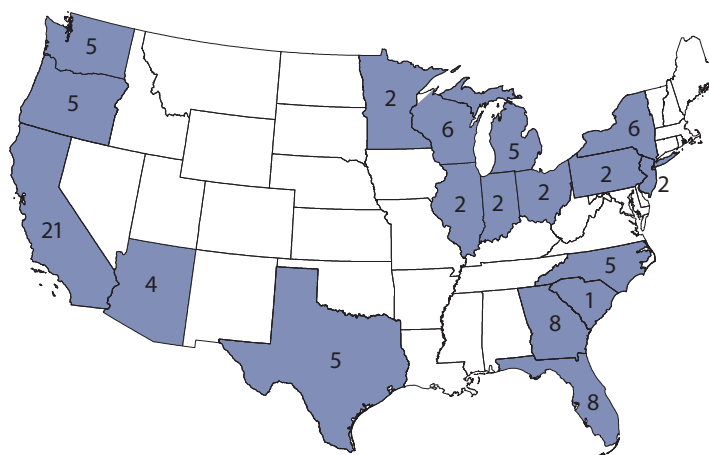
- In Program, select "Survey"
- In Sector, select "Environmental"
- In Group, select "Vegetables"
- In Commodity, select the vegetable(s) for which you want data
- Select your category, data item, geographic level, and year

For pre-defined Quick Stats queries that take you to data for a particular vegetable, go to <http://bit.ly/AgChem> and click "Data Tables" under the 2020 Vegetables heading. For survey methodology information, click "Methodology."

The 2020 Agricultural Chemical Use Survey of vegetable producers collected data about pesticide use as well as pest management practices on acres planted to 22 different vegetable crops. NASS conducted the survey among producers in 18 states, focusing on the states that were major producers for the surveyed crops. (Fig. 1)

Data are for the 2020 crop year, the one-year period beginning after the 2019 harvest and ending with the 2020 harvest. Data are available online for all 22 vegetables (see sidebar for how to access). This document highlights the three vegetables sampled in the most states: onions, pumpkins, and snap beans.

Fig. 1. States in the 2020 Vegetable Chemical Use Survey
(number of crops surveyed in state)



Who Uses Agricultural Chemical Use Data?

Producers, consumers, suppliers, policymakers, USDA and other federal and state agencies rely on chemical use and other pest management data to make decisions about health, environment, safety, and trade issues. Some examples of how the data are used:

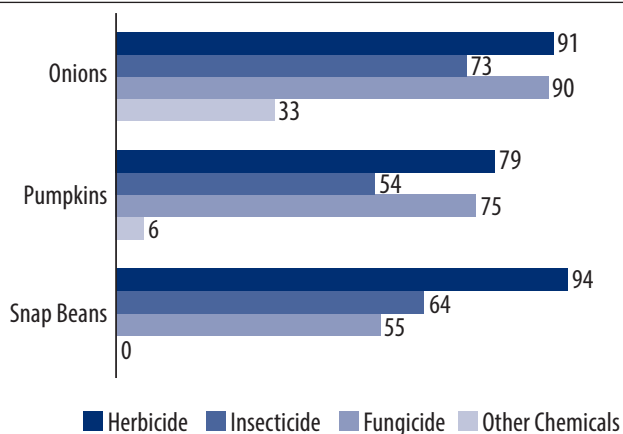
- To evaluate the quality and safety of U.S. food products, providing assurances to both domestic and international customers.
- To identify industry trends and determine the impact of on-farm chemical use and pest management.
- To assess the quality of streams, rivers, and groundwater; the impact of human activities; the benefits of conservation practices; and the effectiveness of integrated pest management.
- To identify which chemicals farmers count on, making it more likely regulators will re-register the product.

Pesticide Use

The pesticide active ingredients used on vegetables are classified 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).

Onion growers applied herbicides to slightly more acres (91% of planted acres) than fungicides or insecticides (90% and 73% of planted acres, respectively). Pumpkin growers applied herbicides and fungicides to 79% and 75% of planted acres, respectively. Snap bean growers applied herbicides to 94% of planted acres but insecticides and fungicides to fewer acres. (Fig. 2). Further detail on the top pesticides can be found in Table 1.

Fig. 2. Pesticides Applied to Selected Vegetables, 2020 Crop Year (percent of planted acres)



Pest Management Practices

The survey asked growers to report on the practices they used to manage pests, including weeds, insects, and diseases. Vegetable growers reported practices in four categories of pest management strategy, widely referred to as PAMS – prevention, avoidance, monitoring, and suppression. Table 2 shows the top practice in each category.

- *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 involve observing or detecting pests through systematic sampling, counting, or other forms of scouting.*
- *Suppression practices involve controlling or reducing existing pest populations to mitigate crop damage.*

Table 1. Top Pesticides Applied to Selected Vegetables, 2020 Crop Year (percent of planted acres)

Active Ingredient	% of Acres with Ingredient Applied	Average Rate (lbs/acre)	Total Applied (lbs)
Herbicides			
Onions			
Oxyfluorfen	83	0.341	33,000
Pendimethalin	75	1.526	112,500
Pumpkins			
Clomazone	52	0.460	13,500
S- Metolachlor	38	1.088	25,900
Snap Beans			
Bentazon	39	0.561	38,600
S- Metolachlor	38	1.165	83,500
Insecticides			
Onions			
Abamectin	44	0.023	1,200
Methomyl	35	1.327	50,100
Spinetoram	35	0.095	3,600
Pumpkins			
Bifenthrin	20	0.152	1,900
Acetamiprid	12	0.252	1,800
Snap Beans			
Lambda-cyhalothrin	37	0.039	2,600
Bifenthrin	30	0.075	3,400
Fungicides			
Onions			
Mancozeb	60	3.969	223,200
Chlorothalonil	44	2.554	120,200
Mefenoxam	44	0.474	23,000
Pumpkins			
Chlorothalonil	58	4.184	121,000
Copper hydroxide	24	1.041	13,500
Snap Beans			
Thiophanate-methyl	39	1.136	80,800
Chlorothalonil	24	1.170	48,700

Table 2. Top Practice in Pest Management Category, 2020 Crop Year (percent of planted acres, 22 vegetables)

<i>Prevention: Plowed down crop residue</i>	76
<i>Avoidance: Rotated crops during the past three years</i>	90
<i>Monitoring: Scouted for insects and mites</i>	95
<i>Monitoring: Scouted for diseases</i>	94
<i>Suppression: Used pesticides with different mechanisms of action to keep pests from becoming resistant to pesticides</i>	58