



2018 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 chemical use surveys as part of the Agricultural Resource Management Survey. NASS conducted the vegetable chemical use survey in the fall of 2018.

Access the Data

For detailed data on each of the 23 vegetables surveyed in 2018, go to <http://bit.ly/AgChem>. Under "2018 Vegetables – released July 24, 2019," click "Data Tables," then select the vegetable for which you want data. For survey methodology information, click "Methodology."

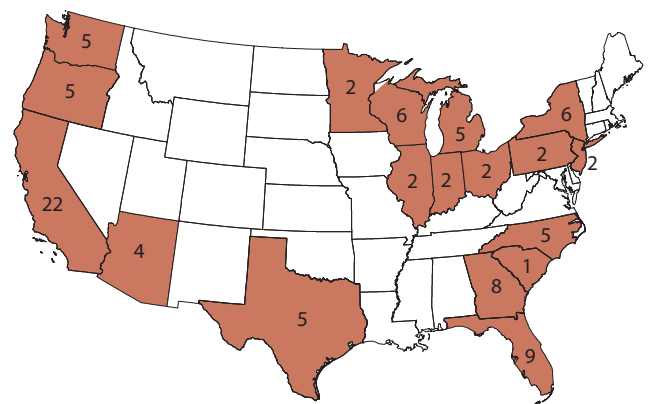
To access data from this survey and previous years, go to the Quick Stats database (<https://quickstats.nass.usda.gov/>).

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

The 2018 Agricultural Chemical Use Survey of vegetable producers collected data about fertilizer and pesticide use as well as pest management practices on acres planted to 23 different vegetable crops. NASS conducted the survey among producers in 18 states, focusing on the states that are major producers for the surveyed crops. (Fig. 1)

Data are for the 2018 crop year, the one-year period beginning after the 2017 harvest and ending after the 2018 harvest. Detailed data are available online for all 23 vegetable crops (see sidebar for how to access). This document highlights three vegetables: cucumbers, snap beans, and watermelons.

Fig. 1. States in the 2018 Vegetable Chemical Use Survey
(number of crops surveyed in state)



Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients, primarily nitrogen (N), phosphate (P₂O₅), potash (K₂O), and sulfur (S). For the 2018 crop year, nitrogen was the most widely applied nutrient for all three featured vegetables (Table 1), followed by phosphate for cucumbers and watermelons and potash for snap beans.

Table 1. Nitrogen Applied to Planted Acres, Selected Vegetables, 2018 Crop Year

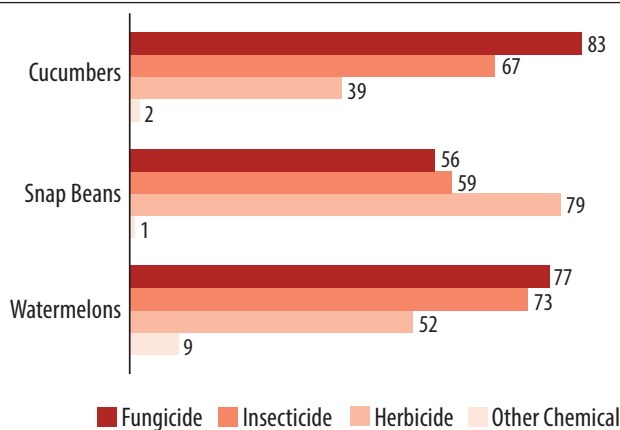
	% of Acres w Nitrogen Applied	Average Rate (lbs/acre)	Total Applied (mil lbs)
Cucumbers	99	257	24.6
Snap beans	88	71	12.5
Watermelon	86	101	9.1

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).

Fig. 2 shows the proportion of planted acres treated by each type of pesticide for the featured vegetables. The adjacent box shows the top pesticides in each category applied to the vegetables.

Fig. 2. Pesticides Applied to Selected Vegetables, 2018 Crop Year
(% 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. 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.

Top Pesticides, by percent of planted acres, Selected Vegetables, 2018 Crop Year

Active Ingredient	% of Acres w Ingredient Applied	Average Rate (lbs/acre)	Total Applied (lbs)
Fungicides			
Cucumbers			
Propamocarb hydrochloride	51	2.385	122,200
Chlorothalonil	38	2.977	113,700
Snap beans			
Azoxystrobin	21	0.225	9,700
Chlorothalonil	20	1.728	70,000
Watermelon			
Mancozeb	53	5.810	310,900
Difenoconazole	51	0.157	8,000
Insecticides			
Cucumbers			
Bifenthrin	32	0.969	30,800
Permethrin	26	0.403	10,300
Snap beans			
Bifenthrin	44	0.096	8,500
Lambda-cyhalothrin	24	0.045	2,200
Watermelon			
Imidacloprid	28	0.573	15,900
Chlorantraniliprole	24	0.108	2,600
Herbicides			
Cucumbers			
Ethalfuralin	36	0.714	25,700
Halosulfuron-methyl	17	0.029	500
Snap beans			
Bentazon	39	0.556	44,500
S- Metolachlor	35	0.988	69,900
Watermelon			
Halosulfuron-methyl	31	0.037	1,200
Terbacil	23	0.771	17,800
Trifluralin	23	0.754	17,100

Table 2. Top Practice in Pest Management Category, 2018 Crop Year
(% of planted acres, 23 vegetables)

<i>Prevention</i> : Cleaned equipment and implements after field work	83
<i>Avoidance</i> : Rotated crops during past three years	86
<i>Monitoring</i> : Scouted for insects and mites	99
<i>Monitoring</i> : Scouted for diseases	99
<i>Suppression</i> : Used pesticides with different mechanisms of action to keep pests from becoming resistant to pesticide	71