2019 AGRICULTURAL CHEMICAL USE

Fruit 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 fruit chemical use survey in the fall of 2019.

Access the Data

Access 2019 and earlier fruit chemical use data through the Quick Stats database (http://quickstats.nass.usda.gov).

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

For pre-defined Quick Stats queries that take you to data for a particular fruit, go to http://bit.ly/AgChem and click "Data Tables" under the 2019 Fruit heading. For survey methodology information, click "Methodology."

The 2019 Agricultural Chemical Use Survey of fruit producers collected data about fertilizer and pesticide use as well as pest management practices on acres planted to 21 different fruit crops. NASS conducted the survey among producers in 12 states, focusing on the states that were major producers for the surveyed crops. (Fig. 1)

Data are for the 2019 crop year, the one-year period beginning after the 2018 harvest and ending after the 2019 harvest. Data are available online for all 21 fruit crops (see sidebar for how to access the data). This document highlights three fruits – apples, blueberries, and peaches, each produced in at least six geographically diverse states.

Fig. 1. States Included in the 2019 Fruit Chemical Use Survey (number of crops surveyed in state)
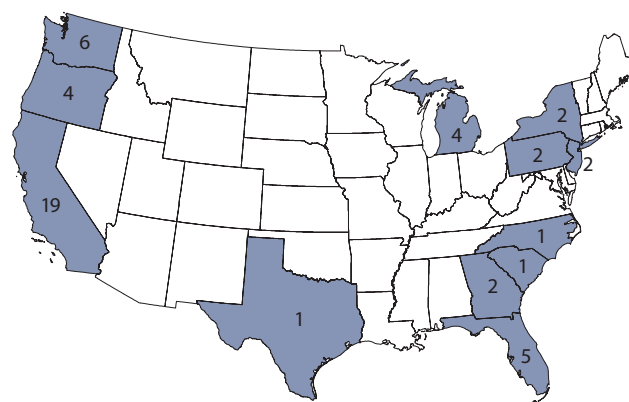
Fertlizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients, primarily nitrogen (N), phosphate (P_2O_5), potash (K_2O), and sulfur (S). For the 2019 crop year, nitrogen was the most widely applied nutrient for all three featured fruit crops (Table 1). Potash was the second most commonly applied nutrient.

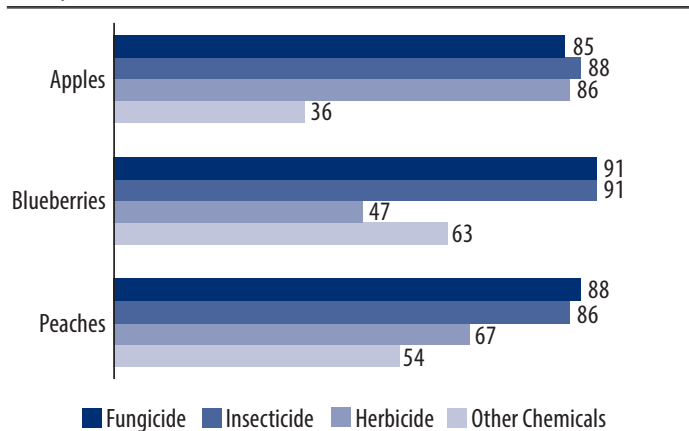**Table 1. Nitrogen Applied to Selected Fruits, 2019 Crop Year**

	% of Acres with Nutrient	Avg. Rate for Year (lbs/acre)	Total Applied (mil lbs)
Apples	62	19	3.3
Blueberries	84	65	4.2
Peaches	59	40	1.7

Pesticide Use

The pesticide active ingredients used on fruit 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 selected fruits. The adjacent box shows the top pesticides in each category applied to selected fruits.

Fig. 2. Pesticides Applied to Selected Fruits, 2019 Crop Year
(% of planted acres)

Apples: Fungicide 85, Insecticide 88, Herbicide 86, Other Chemicals 36
Blueberries: Fungicide 91, Insecticide 91, Herbicide 47, Other Chemicals 63
Peaches: Fungicide 88, Insecticide 86, Herbicide 67, Other Chemicals 54

Legend: ■ Fungicide ■ Insecticide ■ Herbicide ■ Other Chemicals

Pest Management Practices

The survey asked growers to report on the practices they used to manage pests, including weeds, insects, and diseases. Fruit growers reported practices in three categories. Table 2 shows the top practices.

- *Prevention* practices involve actions to keep a pest population from infesting a crop or field.
- *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 2. Top Practices in Pest Management Category, 2019 Crop Year
(% of planted acres, 21 fruits)

Prevention: Crop acres irrigated	93
Monitoring: Scouted for insects and mites	98
Suppression: Used pesticides with different mechanisms of action to keep pest from becoming resistant to pesticides	73

Top Pesticides, by Percent of Planted Acres, Selected Fruits, 2019 Crop Year

Active Ingredient	Acres with Ingredient Applied	Avg. Rate for Year (lbs/acre)	Total Applied (lbs)
Fungicides			
Apples			
Trifloxystrobin	41	0.126	16,200
Calcium polysulfide	40	29.712	3,377,300
Blueberries			
Captan	52	4.361	175,900
Azoxystrobin	49	0.363	13,800
Peaches			
Propiconazole	45	0.236	7,500
Copper hydroxide	41	2.373	68,200
Insecticides			
Apples			
Chlorantranilprole	60	0.120	20,200
Spinetoram	51	0.130	18,600
Blueberries			
Zeta-cypermethrin	51	0.059	2,300
Phosmet	47	1.581	58,100
Peaches			
Esfenvalerate	34	0.113	2,700
Lambda-cyhalothrin	32	0.080	1,800
Herbicides			
Apples			
Paraquat	18	1.078	56,200
Rimsulfuron	14	0.056	2,200
Blueberries			
Glufosinate-ammonium	30	1.366	31,500
Flumioxazin	28	0.224	4,800
Peaches			
Paraquat	23	1.048	17,100
Simazine	15	2.902	29,900
Other Chemicals			
Apples			
Mineral oil	64	38.698	7,036,100
Flutriafol	38	0.124	13,300
Blueberries			
Hydrogen peroxide	21	2.183	35,700
Peroxyacetic acid	18	0.377	5,300
Peaches			
Mineral oil	49	41.671	1,437,600
Z-8-Dodecen acetate	23	0.158	2,500