



2015 AGRICULTURAL CHEMICAL USE SURVEY

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 agricultural chemical use surveys as part of the Agricultural Resource Management Survey.

NASS conducted the fruit chemical use survey in fall 2015.

Access the Data

Access fruit chemical use data through the Quick Stats 2.0 database (<http://quickstats.nass.usda.gov>).

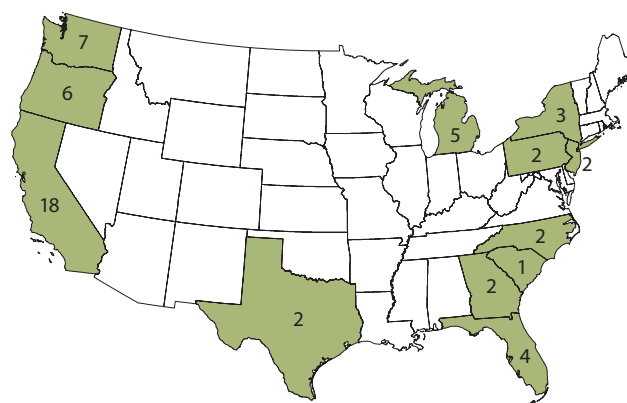
- In Program, select "Survey"
- In Sector, select "Environmental"
- In Group, select "Fruit & Tree Nuts"
- In Commodity, select the fruit(s) you want data for
- Select your category, data item, geographic level, and year

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 2015 Fruit heading. For survey methodology information, click "Methodology."

The 2015 Agricultural Chemical Use Survey of fruit producers collected data about fertilizer and pesticide use as well as pest management practices on acres planted to 23 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) In most cases, the combination of states surveyed represented a significant percentage of the acres planted to that fruit in 2015 (see matrix on p. 4).

Data are for the 2015 crop year, the one-year period beginning after the 2014 harvest and ending after the 2015 harvest. Data are available online for all 23 fruits (see sidebar for how to access). This document highlights three fruit crops – apples, blueberries, and peaches, each produced in at least six geographically diverse states.

Fig. 1. States Included in the 2015 Fruit 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), and potash (K₂O). For the 2015 crop year, nitrogen was the most widely applied nutrient on apples (used on 60 percent of acres planted to apples) and peaches (79 percent of planted acres). For blueberries, potash was the most widely applied nutrient (81 percent of planted acres), followed by phosphate (78 percent) and nitrogen (72 percent). (Table 1)

Table 1. Fertilizers Applied to Selected Fruits, 2015 Crop Year

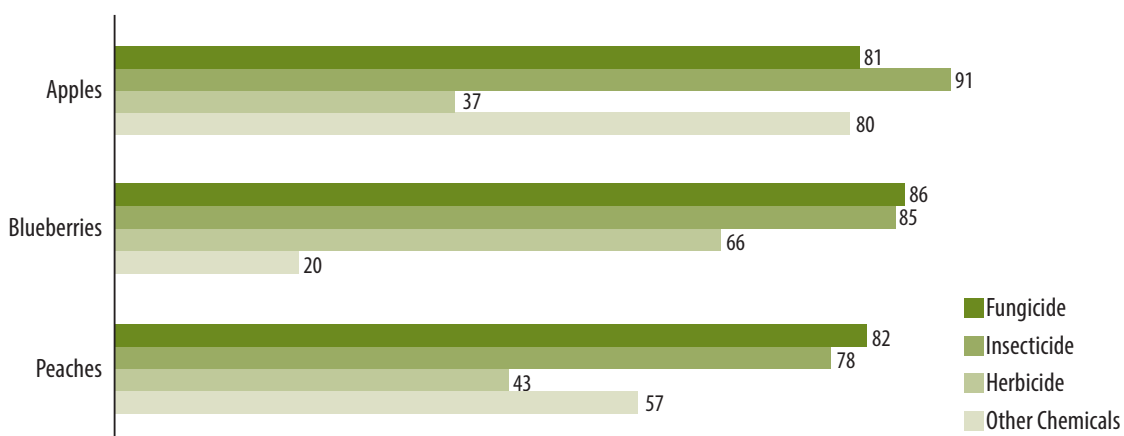
	% of Planted Acres	Avg. Rate for Year (lbs/acre)	Total Applied (mil lbs)
Apples			
Nitrogen	60	28	4.1
Phosphate	42	16	1.7
Potash	48	35	4.2
Blueberries			
Nitrogen	72	78	4.0
Phosphate	78	52	2.9
Potash	81	65	3.8
Peaches			
Nitrogen	79	54	3.2
Phosphate	54	47	1.9
Potash	61	56	2.6

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).

For all three featured fruits, fungicides and insecticides were the most widely applied pesticide types. Growers applied fungicides to 86 percent of blueberry acres, 82 percent of peach acres, and 81 percent of apple acres. They applied insecticides on 91 percent of apple acres. Herbicides and other chemicals were used less extensively. (Fig. 2)

Fig. 2. Pesticides Applied to Selected Fruit, 2015 Crop Year (% of planted acres)



Tables 2 through 4 show the top two fungicides, insecticides, and herbicides, applied to each featured fruit crop.

On apples, mancozeb was the most widely used fungicide, applied to 39 percent of the apple acreage at a rate of 9.77 pounds per acre. Trifloxystrobin was applied to 35 percent of acres. Chlorantranilprole was the most widely used insecticide. It was applied to 52 percent of the apple acreage at a rate of 0.12 pounds per acre.

On blueberries, the most widely used fungicide was fenbuconazole. It was applied to 58 percent of blueberry acres at a rate of 0.17 pounds per acre. Captan was applied to 55 percent of blueberry acres. The most widely applied insecticide was zeta-cypermethrin (used on 62 percent of blueberry acres at a rate of 0.07 pounds per acre).

On peaches, sulfur was the most widely used fungicide. It was applied to 46 percent of peach acres at a rate of 29.0 pounds per acre. Propiconazole was applied to 42 percent of acres. Esfenvalerate was the most widely used insecticide, applied to 31 percent of peach acres at a rate of 0.09 pounds per acre.

Table 2. Top Fungicides, by percent of planted acres, Selected Fruits, 2015 Crop Year

	% of Planted Acres	Avg. Rate for Year (lbs/acre)	Total Applied (lbs)
Apples			
Mancozeb	39	9.77	1,007,700
Trifloxystrobin	35	0.11	9,800
Blueberries			
Fenbuconazole	58	0.17	7,300
Captan	55	4.50	186,200
Peaches			
Sulfur	46	29.0	1,104,900
Propiconazole	42	0.35	12,100

Table 3. Top Insecticides, by percent of planted acres, Selected Fruits, 2015 Crop Year

	% of Planted Acres	Avg. Rate for Year (lbs/acre)	Total Applied (lbs)
Apples			
Chlorantraniliprole	52	0.12	16,900
Chlorpyrifos	47	1.94	242,900
Blueberries			
Zeta-cypermethrin	62	0.07	3,200
Malathion	47	2.37	83,000
Peaches			
Esfenvalerate	31	0.09	2,400
Lambda-cyhalothrin	23	0.12	2,100

Table 4. Top Herbicides, by percent of planted acres, Selected Fruits, 2015 Crop Year

	% of Planted Acres	Avg. Rate for Year (lbs/acre)	Total Applied (lbs)
Apples			
Glyphosate isopropylamine salt	18	1.68	79,000
Paraquat	16	0.94	40,500
Blueberries			
Diuron	24	1.72	30,600
Paraquat	23	0.81	13,500
Peaches			
Glyphosate isopropylamine salt	23	1.41	26,200
2,4-D, dimethylamine salt	14	1.36	15,100

Pest Management Practices

The survey asked growers to report on the practices they used to manage pests (including weeds, insects, and diseases) on all their fruit acres. Fruit growers reported practices in three categories of pest management strategy: prevention, monitoring, and suppression.

- *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.

Scouting for insects and mites was the most widely reported monitoring practice, used on 98 percent of fruit acres, followed closely by scouting for diseases and scouting for weeds. The top prevention practice was irrigating fruit crops (92 percent of acres), followed by cleaning equipment and implements after fieldwork (80 percent). The suppression practice of alternating pesticides to keep pests from becoming resistant was used on 67 percent of acres. (Table 5)

Table 5. Top Practices in Pest Management Category, 2015 Crop Year (% of planted acres, all fruits)

Prevention	
Irrigated crop acres	92
Cleaned equipment and implements after fieldwork	80
Chopped, mowed, plowed, or burned field edges, etc.	73
Monitoring	
Scouted for insects and mites	98
Scouted for diseases	93
Scouted for weeds	92
Suppression	
Alternated pesticides with different mechanisms of action	67
Scouted for information to make decisions	56
Maintained ground covers or other physical barriers	43

States and Crops in the 2015 Fruit Chemical Use Survey

	California	Florida	Georgia	Michigan	New Jersey	New York	North Carolina	Oregon	Pennsylvania	South Carolina	Texas	Washington	Surveyed States	
													No.	% of U.S. acres of crop*
Apples	X			X		X	X	X	X			X	7	84
Apricots	X												1	88
Avocados	X												1	88
Blackberries								X					1	100
Blueberries			X	X	X		X	X				X	6	76
Cherries, Sweet	X			X				X				X	4	97
Cherries, Tart				X		X						X	3	84
Dates	X												1	100
Figs	X												1	100
Grapefruit	X	X									X		3	100
Grapes, All	X					X						X	3	94
Kiwifruit	X												1	100
Lemons	X												1	84
Nectarines	X												1	93
Olives	X												1	100
Oranges, All	X	X											2	99
Peaches	X		X	X	X				X	X	X		7	81
Pears	X							X				X	3	95
Plums	X												1	100
Prunes	X												1	100
Raspberries								X				X	2	62
Tangelos		X											1	100
Tangerines	X	X											2	96

*Based on Citrus Fruits: 2015 Summary (NASS, September 2015) and Noncitrus Fruits and Nuts: 2015 Summary (NASS, July 2016)

