



Agricultural Chemical/Fertilizer Use Statistical Program

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Chemical/Fertilizer Use Topics

- Program History
- Survey and Estimation Methodology
- Quality Measures
- Data Products



Chemical Use Program History

- NASS began collecting and publishing chemical use data in the early 1990's.
- Partially in reaction to the 1990 Alar scare, the Government responded to public concerns with initiatives on Food Safety and Water Quality. These Initiatives have evolved over the years, but the need for reliable, timely environmental data has not changed.
- Since 1990, NASS has surveyed U.S. farmers to collect information on the chemical ingredients they apply to agricultural commodities including fertilizers and pesticides. On a rotating basis, the program currently includes fruits, vegetables and major field crops.
- The program also collects information on the pest management practices: prevention, avoidance, monitoring, and suppression (PAMS) farmers implement to reduce their dependence on agricultural chemicals (e.g., practices that make pesticides more effective or are an alternative to pesticides).

Field Crop Partnership

- NASS conducts chemical/fertilizer use surveys for **field crops** in cooperation with the USDA's Economic Research Service (ERS) as part of the Agricultural Resource Management Survey (ARMS II) program.
- The ARMS II Survey is conducted annually from October through December.
- Integrating ARMS II as part of the ARMS III survey cycle allows fertilizer and pesticide data to be analyzed with farm finances, farm household characteristics and other production practices.

Sampled States

Fig. 1. States in the 2021 Corn Chemical Use Survey

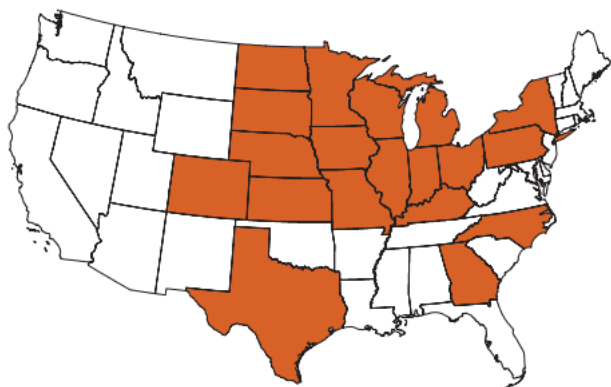


Fig. 1. States in the 2020 Soybean Chemical Use Survey

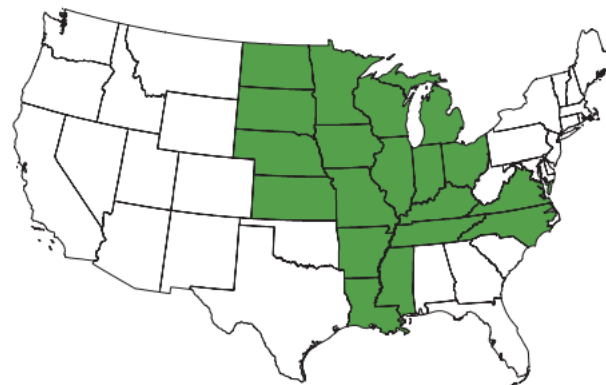


Fig. 1. States in the 2020 Vegetable Chemical Use Survey
(number of crops surveyed in state)

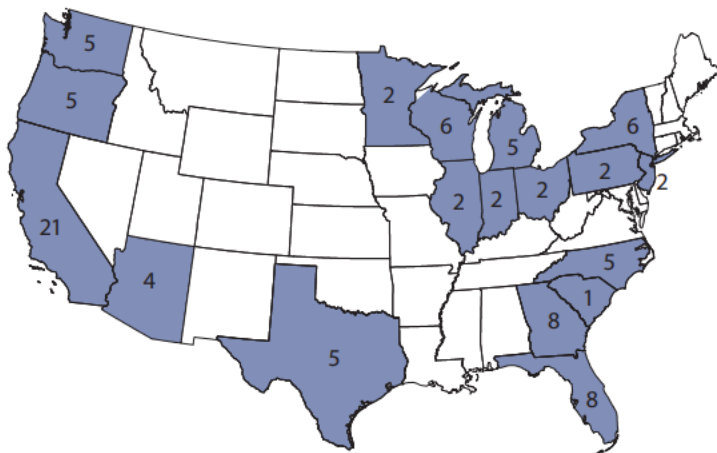


Fig. 1. States Included in the 2021 Fruit Chemical Use Survey
(number of crops surveyed in state)





ARMS II and Fruit/Vegetable Chemical/Fertilizer Use Crop Rotation

Crop Year	Commodity * Fertilizer
2017	Fruit, cotton, soybeans, wheat
2018	Vegetables*, corn, soybeans, peanuts
2019	Fruit*, wheat, sorghum, cotton, barley
2020	Vegetables, soybeans
2021	Fruit, corn, cotton, rice
2022	Vegetables*, wheat, potatoes
2023	Fruit*, soybeans, oats, peanuts, barley

2021 Corn Fertilizer Use

Fertilizer refers to a soil-enriching input that contains one or more plant nutrients. For the 2021 crop year, farmers applied nitrogen to 95% of planted acres, at an average rate of 150 pounds per acre, for a total of 12.3 billion pounds.

Farmers applied phosphate to 75% of planted acres, potash to 65%, and sulfur to 34% of planted acres. (Table 1)

Table 1. Fertilizer Applied to Corn Planted Acres, 2021 Crop Year

	% of Acres with Nutrient ^a	Average Rate (lbs/acre)	Total Applied (bil lbs)
Nitrogen (N)	95	150	12.3
Phosphate (P ₂ O ₅)	75	64	4.1
Potash (K ₂ O)	65	77	4.3
Sulfur (S)	34	19	0.5

^aAcres with multiple nutrients are counted in each category.

2019 Fruit Fertilizer 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

Data Products

- [https://www.nass.usda.gov/Surveys/Guide to NASS Surveys/Chemical Use/index.php](https://www.nass.usda.gov/Surveys/Guide%20to%20NASS%20Surveys/Chemical%20Use/index.php)



Respond Online

Click here to [complete your survey online](#). Remember, you will need your unique survey code

[Get the Data](#)

[Methodology and Quality Measures](#)

[About the Survey](#)

Latest Releases

Since 2009, the release of chemical use surveys is available through [Quick Stats](#). The following material each survey: highlights fact sheet, a methodology paper, and a set of data tables featuring commonly requested information.

2021 Corn, Cotton, and Rice – released May 13, 2022:

Highlights ([Corn](#), [Cotton](#), and [Rice](#)) | [Data Tables](#) | [Methodology](#)

2020 Vegetables - released July 21, 2021:

[Highlights](#) | [Data Tables](#) | [Methodology](#)

2020 Soybeans - released May 14, 2021

[Highlights](#) | [Data Tables](#) | [Methodology](#)

2019 Fruits - released July 22, 2020

[Highlights](#) | [Data Tables](#) | [Methodology](#)

2019 Barley, Cotton, Sorghum, and Wheat – released May 8, 2020:

Highlights ([Barley](#), [Cotton](#), [Sorghum](#), and [Wheat](#)) | [Data Tables](#) | [Methodology](#)

Quick Stats

- Since May 2009 Agricultural Chemical and Fertilizer use data are published to the Quick Stats 2.0 database only.

Quick Stats

Home

Navigation History: Program->Sector->Group->Commodity->Category->Data Item->Domain

Select Commodity (one or more)

Keyword Search [Hints](#)

Search

Program:

CENSUS
SURVEY

Sector:

ANIMALS & PRODUCTS
CROPS
ECONOMICS
ENVIRONMENTAL

Group:

FIELD CROPS
FRUIT & TREE NUTS
HORTICULTURE
LIVESTOCK
VEGETABLES

Commodity:

BARLEY
CORN
COTTON
GRAIN
OATS
PEANUTS
RICE
SORGHUM
SOYBEANS

Category:

APPLICATIONS
PEST MGMT
TREATED

Data Item:

CORN - APPLICATIONS, MEASURED IN LB / ACRE / APPLICATION, 10TH PERCENTILE
CORN - APPLICATIONS, MEASURED IN LB / ACRE / APPLICATION, 90TH PERCENTILE
CORN - APPLICATIONS, MEASURED IN LB / ACRE / APPLICATION, AVG
CORN - APPLICATIONS, MEASURED IN LB / ACRE / APPLICATION, CV PCT
CORN - APPLICATIONS, MEASURED IN LB / ACRE / APPLICATION, MEDIAN
CORN - APPLICATIONS, MEASURED IN LB / ACRE / YEAR, 10TH PERCENTILE
CORN - APPLICATIONS, MEASURED IN LB / ACRE / YEAR, 90TH PERCENTILE
CORN - APPLICATIONS, MEASURED IN LB / ACRE / YEAR, AVG

Domain:

CHEMICAL, FUNGICIDE
CHEMICAL, HERBICIDE
CHEMICAL, INSECTICIDE
CHEMICAL, OTHER
FERTILIZER
RESTRICTED USE CHEMICAL, HERBICIDE
RESTRICTED USE CHEMICAL, INSECTICIDE
RESTRICTED USE CHEMICAL, OTHER

Highlights

- <https://www.nass.usda.gov/Publications/Highlights/index.php>

NASS Highlights

July 2021 • No. 2021-2



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

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



Pre-Defined Queries

- https://www.nass.usda.gov/Data_and_Statistics/Pre-Defined_Queries/index.php

Environmental:

- [Agricultural Chemical Usage - 2021 Corn, Cotton, and Rice](#)

- [Agricultural Cher](#)

- [Agricultural Cher](#)

- [Agricultural Cher](#)

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2020 Vegetable Chemical Use - Released July 21, 2021

The following are requested queries from our Quick Stats database system dealing with Vegetable Chemical Use and have been developed for your convenience based on their timeliness and user feedback.

[Please click here for a listing of symbol and selected data item definitions.](#)

Pesticide Use

[Asparagus](#)

[Cauliflower](#)

[Lettuce, Head](#)

[Spinach](#)

[Beans, Snap](#)

[Celery](#)

[Lettuce, Other](#)

[Squash](#)

[Broccoli](#)

[Corn, Sweet](#)

[Onions](#)

[Tomatoes](#)

[Cabbage](#)

[Cucumbers](#)

[Peas, Green](#)

[Watermelons](#)

[Cantaloupes](#)

[Garlic](#)

[Peppers, Bell](#)

[Carrots](#)

[Honeydews](#)

[Pumpkins](#)

Pest Management

[Vegetable Totals \(excluding Potatoes\), Incl Strawberries, In the Open](#)

Quality Measures

- https://www.nass.usda.gov/Publications/Methodology_and_Data_Quality/index.php
- Scope and Purpose
- Survey Timeline
- Sampling
- Sampling Frames and Methods
- Data Collection and Editing
- Analysis Tools
- Nonsampling Errors
- Nonresponse Adjustment
- Outliers
- Estimators
- Estimation
- Coefficient of Variation (CV'S)
- State level sample sizes and response rates

Future Data Dissemination

- NASS is developing a new cloud-based data dissemination system. 2023 should be the year with a larger roll-out.
- The new database will replace Quick Stats. **There will be a new data taxonomy/structure.** Users will be able to do ad-hoc queries. All years of historic data are planned to be loaded to the new database.
- The new system will be API-driven.
- The data dictionary will be available.
- The new user interface will make it much easier to sort, query, and find data.



All Reports Available At

www.nass.usda.gov

For Questions

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