United States Department of Agriculture

National Agricultural Statistics Service

Technology Use (Farm Computer Usage and Ownership)

August 2023

ISSN: 1949-0887

Contents

This page intentionally left blank

Farm Technology Use and Ownership Highlights

Nationally, 85 percent of farms reported having access to the internet. In 2023, 32 percent of farms used the internet to purchase agricultural inputs, which was an increase of 3 percent from 2021. Additionally, 23 percent of farms used the internet to market agricultural activities, which was an increase of 2 percent from 2021. Farms which conducted business with non-agricultural websites in 2023 increased by 2 percent to 49 percent.

In 2023, 51 percent of internet connected farms utilized a broadband connection while 75 percent of internet connected farms had access through a cellular data plan. Additionally, 69 percent of farms had a desktop or laptop computer while 82 percent of farms had a smart phone.

Farm Technology Use – States and United States: 2021 and 2023

State	Farms					
	Own or use desktop or laptop computer		Own or use smart phone		Own or use a tablet or other portable wireless computer	Own or use some other type of computer
	2021	2023	2021	2023	2023	2023
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Alabama	63	60	83	91	24	2
Arizona [1]	53	50	49	56	31	9
Arkansas	59	64	76	81	30	(Z)
California	88	85	84	85	35	1
Colorado	71	75	75	82	30	5
Florida	65	62	78	85	26	2
Georgia	72	75	90	92	52	1
Idaho	79	85	81	87	40	5
Illinois	75	72	85	89	35	3
Indiana	65	63	58	59	28	1
Iowa	72	75	73	80	36	(Z)
Kansas	81	85	85	92	40	1
Kentucky	55	60	74	81	35	(Z)
Louisiana	75	73	84	86	34	1
Maryland [2]	70	73	62	70	20	1
Michigan	74	75	79	81	40	2
Minnesota	67	70	76	85	30	1
Mississippi	49	53	81	88	20	(Z)
Missouri	64	62	77	79	33	6
Montana	81	81	77	85	33	1
Nebraska	74	77	80	85	40	4
New Hampshire [3]	88	85	70	73	53	(Z)
New Jersey	84	82	72	79	39	1
New Mexico	36	40	53	55	10	1
New York	69	67	69	70	44	1
North Carolina	69	71	88	90	43	1
North Dakota	73	77	72	81	45	1
Ohio	54	60	58	65	22	(Z)
Oklahoma	57	56	80	88	18	1
Oregon	84	88	86	87	38	2
Pennsylvania	52	51	53	61	24	2
South Carolina	66	70	84	88	25	(Z)
South Dakota	81	82	81	89	41	4
Tennessee	69	69	77	85	24	2
Texas	65	68	89	92	29	1
Utah	77	74	85	91	45	4
Virginia	63	63	71	80	21	1
Washington	78	81	63	70	35	1
West Virginia	54	54	56	65	22	(Z)
Wisconsin	65	70	67	73	29	(Z)
Wyoming	76	73	90	92	42	(Z)
United States [4]	67	69	77	82	32	2

(Z) Less than half of the unit shown.
[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Farm Internet Access – States and United States: 2021 and 2023

State	Farms	
	With internet access	
	2021	2023
	(percent)	(percent)
Alabama	83	86
Arizona [1]	63	65
Arkansas	76	80
California	90	91
Colorado	84	87
Florida	83	84
Georgia	94	95
Idaho	95	96
Illinois	90	91
Indiana	79	80
Iowa	82	85
Kansas	91	92
Kentucky	80	85
Louisiana	85	86
Maryland [2]	80	85
Michigan	84	88
Minnesota	83	86
Mississippi	76	80
Missouri	79	84
Montana	88	93
Nebraska	85	90
New Hampshire [3]	97	98
New Jersey	91	92
New Mexico	50	55
New York	81	82
North Carolina	83	87
North Dakota	82	85
Ohio	64	69
Oklahoma	80	85
Oregon	91	92
Pennsylvania	64	66
South Carolina	79	83
South Dakota	90	93
Tennessee	80	84
Texas	83	89
Utah	96	97
Virginia	74	79
Washington	86	91
West Virginia	73	74
Wisconsin	82	83
Wyoming	89	90
United States [4]	82	85

[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Use of Internet – States and United States: 2021 and 2023

[Agricultural inputs include seed, fertilizer, chemicals, veterinarian supplies, feed, machinery, replacement parts, farm supplies, office equipment, etc. Agricultural marketing activities include direct sales of commodities, on-line crop and livestock auctions, on-line market advisory services, commodity price tracking, etc.]

State	Farms			
	Purchase agricultural inputs over internet		Conduct agricultural marketing activities over internet	
	2021	2023	2021	2023
	(percent)	(percent)	(percent)	(percent)
Alabama	32	22	20	9
Arizona [1]	31	23	19	18
Arkansas	19	29	25	26
California	29	37	21	33
Colorado	33	47	26	40
Florida	37	31	20	16
Georgia	39	46	21	30
Idaho	38	51	23	26
Illinois	30	36	32	37
Indiana	27	31	20	25
Iowa	32	29	32	28
Kansas	38	46	26	37
Kentucky	19	29	12	16
Louisiana	23	23	18	12
Maryland [2]	32	46	35	42
Michigan	41	37	27	23
Minnesota	27	31	30	34
Mississippi	21	20	11	7
Missouri	28	27	16	26
Montana	32	47	22	23
Nebraska	31	39	31	31
New Hampshire [3]	45	49	30	36
New Jersey	35	49	19	26
New Mexico	13	27	11	13
New York	46	41	27	25
North Carolina	38	35	26	32
North Dakota	29	43	29	39
Ohio	18	28	16	25
Oklahoma	30	27	13	20
Oregon	42	40	28	21
Pennsylvania	28	26	18	18
South Carolina	26	22	23	17
South Dakota	27	40	27	35
Tennessee	30	25	20	18
Texas	18	21	8	10
Utah	45	46	36	31
Virginia	30	39	18	15
Washington	41	54	32	40
West Virginia	16	30	11	12
Wisconsin	28	32	22	17
Wyoming	25	18	23	13
United States [4]	29	32	21	23

[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Internet Access of Reports, Services, and Websites – States and United States: 2021 and 2023

[Reference period for access and usage of USDA reports, research information, and services is the last 12 months prior to June 1 of survey year]

State	Farms					
	Access USDA/NASS reports over internet		Access other USDA reports/services over internet		Access other Federal government websites over internet	
	2021	2023	2021	2023	2021	2023
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Alabama	17	11	22	12	17	11
Arizona [1]	9	6	27	17	31	21
Arkansas	19	22	26	29	18	23
California	16	16	31	26	40	30
Colorado	11	20	24	30	27	22
Florida	20	12	30	20	33	25
Georgia	22	15	25	15	31	23
Idaho	16	23	19	26	29	24
Illinois	17	25	28	33	20	23
Indiana	11	12	20	21	17	19
Iowa	20	13	28	20	23	17
Kansas	16	21	34	33	27	37
Kentucky	17	12	20	21	15	16
Louisiana	21	15	27	13	22	12
Maryland [2]	16	14	30	27	26	23
Michigan	21	12	25	19	29	20
Minnesota	15	16	25	27	18	20
Mississippi	9	6	16	9	15	11
Missouri	12	14	25	25	13	19
Montana	16	15	25	24	31	24
Nebraska	17	22	33	33	27	20
New Hampshire [3]	25	17	31	26	25	24
New Jersey	14	8	26	15	31	21
New Mexico	5	9	10	9	16	15
New York	9	14	25	14	27	17
North Carolina	11	18	17	26	27	22
North Dakota	22	24	32	34	25	32
Ohio	6	9	10	13	10	9
Oklahoma	9	10	19	19	23	14
Oregon	14	16	25	13	33	27
Pennsylvania	11	9	18	12	17	12
South Carolina	25	16	23	15	17	20
South Dakota	20	19	36	38	23	28
Tennessee	10	10	23	20	25	22
Texas	4	6	9	10	11	12
Utah	20	19	31	25	30	27
Virginia	5	8	11	16	17	18
Washington	15	15	24	30	32	38
West Virginia	7	10	13	15	15	13
Wisconsin	9	12	23	23	25	22
Wyoming	8	8	19	17	25	16
United States [4]	13	13	22	20	21	19

[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Conducting Business on the Internet – States and United States: 2021 and 2023

State	Farms					
	Conduct business with any USDA website		Conduct business with any other Federal government website		Conduct business with any non-agricultural website	
	2021	2023	2021	2023	2021	2023
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Alabama	19	11	16	9	30	32
Arizona [1]	18	11	7	4	37	22
Arkansas	12	23	10	18	32	38
California	23	26	25	16	61	55
Colorado	18	28	14	14	53	56
Florida	16	11	12	9	38	23
Georgia	15	14	24	14	52	59
Idaho	16	21	13	8	64	61
Illinois	20	31	10	16	54	61
Indiana	12	14	8	11	39	42
Iowa	24	21	16	8	56	52
Kansas	22	30	20	25	53	66
Kentucky	10	13	11	8	53	40
Louisiana	16	11	19	8	32	45
Maryland [2]	15	14	18	8	43	43
Michigan	22	15	16	7	54	42
Minnesota	19	28	9	16	53	63
Mississippi	10	7	11	7	28	38
Missouri	14	19	8	13	43	47
Montana	13	15	14	11	61	61
Nebraska	26	27	18	13	50	62
New Hampshire [3]	23	12	10	16	53	54
New Jersey	11	7	14	10	51	42
New Mexico	6	9	10	9	20	32
New York	17	11	13	6	51	51
North Carolina	19	15	16	11	62	58
North Dakota	24	28	20	19	53	64
Ohio	9	12	6	5	32	39
Oklahoma	13	14	13	10	40	56
Oregon	16	14	18	13	52	67
Pennsylvania	12	10	9	7	33	29
South Carolina	16	9	14	3	26	42
South Dakota	23	33	17	20	54	57
Tennessee	17	11	13	15	50	36
Texas	9	7	4	5	48	53
Utah	24	22	18	13	61	63
Virginia	9	10	6	7	51	42
Washington	19	21	17	8	57	69
West Virginia	7	13	5	4	25	26
Wisconsin	16	16	8	8	48	55
Wyoming	16	10	10	4	53	44
United States [4]	16	16	12	11	47	49

[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Methods of Internet Access – States and United States: 2023

[Various methods of internet access for those operators who have access to the Internet. May not add to 100% due to operators with multiple types of internet access]

State	Farms				
	Dialup	Broadband (DSL, cable, fiber optic)	Cellular	Satellite	Other
	2023				
	(percent)	(percent)	(percent)	(percent)	(percent)
Alabama	1	49	75	18	(Z)
Arizona [1]	(Z)	51	52	21	1
Arkansas	2	48	78	20	2
California	(Z)	43	83	39	1
Colorado	2	42	73	30	1
Florida	2	58	67	28	1
Georgia	3	62	87	27	(Z)
Idaho	3	61	78	25	(Z)
Illinois	4	52	79	22	4
Indiana	2	42	60	16	2
Iowa	3	51	75	17	(Z)
Kansas	4	63	78	25	3
Kentucky	3	56	80	20	1
Louisiana	4	68	85	24	(Z)
Maryland [2]	(Z)	52	71	26	(Z)
Michigan	1	51	79	15	(Z)
Minnesota	2	52	79	23	(Z)
Mississippi	4	40	77	22	5
Missouri	2	43	80	18	2
Montana	3	63	72	17	2
Nebraska	3	54	75	26	4
New Hampshire [3]	3	73	82	21	1
New Jersey	(Z)	76	84	7	(Z)
New Mexico	2	47	60	18	(Z)
New York	2	64	63	13	1
North Carolina	6	60	73	19	(Z)
North Dakota	2	72	70	17	2
Ohio	3	47	59	22	(Z)
Oklahoma	1	32	81	14	7
Oregon	2	60	73	20	3
Pennsylvania	4	62	57	8	1
South Carolina	(Z)	46	85	28	5
South Dakota	4	63	70	17	1
Tennessee	3	64	76	16	(Z)
Texas	2	41	84	39	3
Utah	4	69	72	23	(Z)
Virginia	1	51	70	18	(Z)
Washington	1	47	60	28	6
West Virginia	3	54	56	16	5
Wisconsin	3	56	65	16	(Z)
Wyoming	3	45	80	19	2
United States [4]	2	51	75	23	2

(Z) Less than half of the unit shown.
[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Precision Agriculture Practices

Beginning in 2021, data were collected for precision agriculture practices with the question: "In the last 12 months, did this farm or ranch use precision agriculture practices to manage crops or livestock? This would include the use of global positioning (GPS) guidance systems, GPS yield monitoring and soil mapping, variable rate input applications, use of drones for scouting fields or monitoring livestock, electronic tagging, precision feeding, robotic milking, etc.." Results are presented in the following table.

Farm Precision Agriculture Practices – States and United States: 2021 and 2023

State	Farms	
	Using precision agriculture practices to manage crops or livestock	
	2021	2023
	(percent)	(percent)
Alabama	22	22
Arizona [1]	23	23
Arkansas	23	27
California	39	40
Colorado	23	27
Florida	8	12
Georgia	9	13
Idaho	24	27
Illinois	48	51
Indiana	31	32
Iowa	52	54
Kansas	46	49
Kentucky	9	11
Louisiana	31	31
Maryland [2]	27	31
Michigan	36	36
Minnesota	28	32
Mississippi	17	20
Missouri	20	23
Montana	28	28
Nebraska	51	55
New Hampshire [3]	24	24
New Jersey	27	27
New Mexico	12	14
New York	26	26
North Carolina	23	27
North Dakota	54	57
Ohio	30	31
Oklahoma	18	18
Oregon	20	20
Pennsylvania	20	20
South Carolina	10	14
South Dakota	53	53
Tennessee	31	31
Texas	13	13
Utah	31	31
Virginia	8	11
Washington	21	25
West Virginia	7	8
Wisconsin	15	18
Wyoming	33	33
United States [4]	25	27

[1] Includes Arizona and Nevada.
[2] Includes Delaware and Maryland.
[3] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[4] Excludes Alaska and Hawaii.

Farm Numbers

To help equate the percentages published in this report to actual farm counts, a table showing "Number of Farms by States and United States" from the February 2023 NASS publication *Farms, Land in Farms* is included below. A farm is "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year."

Number of Farms – States and United States: 2021 and 2022

[2023 number of farms not available until 2024]

State	Farms	
	2021	2022
	(number)	(number)
Alabama	38,500	38,100
Arizona	19,000	18,800
Arkansas	42,000	41,900
California	69,000	68,400
Colorado	39,000	38,800
Delaware	2,300	2,300
Florida	47,500	47,300
Georgia	41,300	41,300
Idaho	24,600	24,400
Illinois	70,900	70,700
Indiana	55,100	54,800
Iowa	84,900	84,900
Kansas	58,600	57,700
Kentucky	74,100	73,500
Louisiana	27,400	27,400
Maryland	12,400	12,400
Michigan	46,000	44,300
Minnesota	67,400	67,100
Mississippi	34,300	34,100
Missouri	95,000	95,000
Montana	27,100	27,100
Nebraska	44,800	44,300
Nevada	3,400	3,300
New Hampshire [1]	32,300	32,300
New Jersey	9,900	9,900
New Mexico	24,700	24,100
New York	33,400	33,400
North Carolina	45,100	45,000
North Dakota	26,000	25,900
Ohio	76,900	76,500
Oklahoma	77,200	77,200
Oregon	37,100	36,900
Pennsylvania	52,700	52,700
South Carolina	24,600	24,600
South Dakota	29,400	29,400
Tennessee	69,500	69,500
Texas	247,000	246,000
Utah	17,900	17,900
Virginia	41,500	41,500
Washington	35,300	35,200
West Virginia	22,300	22,500
Wisconsin	64,100	64,100
Wyoming	12,200	11,900
United States [2]	2,003,700	1,994,400

[1] Includes Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.
[2] Excludes Alaska and Hawaii.

Statistical Methodology

Survey Procedures: The June Agricultural Survey is conducted every year to provide estimates of farm numbers and land in farms, crop acres planted, grains and oilseeds in storage, livestock inventories, and land values. In the odd-numbered years since 1997, questions were added to the survey form that asked the operator about their access and use of computers. Some states were combined due to their low number of responses. When this occurs, it is footnoted in the tables. Estimates are revised periodically to provide a better foundation for current and future estimates. Revisions are made when sufficient data become available to check the accuracy of the original estimates.

Estimating Procedures: The Technology use data are separated from the June Area dataset and summarized. Since all States conduct identical surveys, the State data can be pooled, and national survey results computed. The summary results provide point estimates and their standard errors for each data series being estimated. Once editing is complete, the data are summarized. Survey results are reviewed and State and National estimates are established.

Survey results are delivered to a subject matter specialist for review and acceptance. All review is performed in NASS's Washington, D.C. Headquarters. Current results are reviewed, in tabular form, against the historical data series for consistency and reasonableness.

Revision Policy: For non-census years, Technology use values are subject to a biennial revision. After the 5-year Census of Agriculture is completed, Technology use estimates are subject to revisions.

Reliability: The 2023 Technology use estimates are based on responses from approximately 14,000 agricultural operations, and represent all sizes and types of farms. Coefficients of variations (CVs) at the national level in 2023 were 13.3 percent or less.

Published Estimates: The Farm Technology Use and Ownership State and National estimates are published in August in odd numbered years. While the June Area Survey is the primary source of data for the estimates, supplemental survey data and potential previous revisions are also considered, as described in the more detailed NASS Technology Use Methodology and Quality Measures publication.

Information Contacts

Listed below are the commodity statisticians in the Environmental, Economics, and Demographics Branch of the National Agricultural Statistics Service to contact for additional information. E-mail inquiries may be sent to nass@nass.usda.gov.

Tony Dorn, Chief, Environmental, Economics, and Demographics Branch ..... (202) 720-6146

Adam Peters, Head, Environmental, and Demographics Section ..... (202) 720-0684

William Cumberland – Census of Agriculture, Irrigation and Water Management, Irrigation Orgs..... (202) 690-1348
Fred Granja – Census of Agriculture, Census of PR and Outlying Areas, Organics..... (202) 690-3233
Mallory Johnson – Census of Agriculture, Organics, CEAP..... (502) 907-3208
Jeff Kissel – Census of Agriculture, Farmers Market Managers, CEAP, TOTAL, Local Foods ..... (202) 720-5777
Thomas Laidley – Census of Agriculture, American Indian Reservations, TOTAL, Agroforestry..... (202) 221-9280
Jamila Sani – Census of Agriculture, Census of Horticulture, Farm Technology Use, CPAM..... (202) 690-3226
Dominique Sims – Census of Agriculture, Farm Demographics, American Indian Reservations..... (202) 690-1719
Irvin Yeager – Census of Agriculture, PR and Outlying Areas, Aquaculture, Local Foods Marketing ... (202) 720-7492

Access to NASS Reports

For your convenience, you may access NASS reports and products the following ways:

- All reports are available electronically, at no cost, on the NASS web site: www.nass.usda.gov.

- Both national and state specific reports are available via a free e-mail subscription. To set-up this free subscription, visit www.nass.usda.gov and click on "National" or "State" in upper right corner above "search" box to create an account and select the reports you would like to receive.

- Cornell's Mann Library has launched a new website housing NASS's and other agency's archived reports. The new website, https://usda.library.cornell.edu. All email subscriptions containing reports will be sent from the new website, https://usda.library.cornell.edu. To continue receiving the reports via e-mail, you will have to go to the new website, create a new account and re-subscribe to the reports. If you need instructions to set up an account or subscribe, they are located at: https://usda.library.cornell.edu/help. You should whitelist notifications@usda-esmis.library.cornell.edu in your email client to avoid the emails going into spam/junk folders.

For more information on NASS surveys and reports, call the NASS Agricultural Statistics Hotline at (800) 727-9540, 7:30 a.m. to 4:00 p.m. ET, or e-mail: nass@usda.gov.