Land Values Methodology and Quality Measures

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Scope and Purpose: Land values are estimated annually in August using data collected on the Agricultural Land Values and Technology Use survey. Estimates are published for the United States and by State, except Alaska and Hawaii, and include the value per acre of all farm real estate, cropland, and pasture. Value per acre estimates are also published for States with a prevalence of both irrigated and non-irrigated cropland. In addition, the publication contains estimates for the total value of all farm real estate by State, except Alaska and Hawaii, and for the United States.

Survey Timeline: Data collection is conducted by mail and phone interview from the end of April through early -June. The reference date for the Agricultural Land Values and Technology Use Survey is April 1. Regional Field Offices conduct editing and analysis from early May though the end of data collection. Once editing is complete, the data are summarized. Survey results are reviewed, and State and National estimates are established and published by August.

Sampling: The target population for the Agricultural Land Values and Technology Use Survey is all US farms and ranches (excluding Alaska and Hawaii) with at least one acre of agricultural land and $1,000 or more in actual or potential agricultural sales. The Agricultural Land Values and Technology Use sampling frame comprises all active operations in the contiguous 48 states on NASS's List Frame that have at least one acre of total land, pastureland, and/or cropland and at least $1,000 of farm value of sales. A stratified sample is drawn using state and county group as strata. County groups are created using 2022 Census of Agriculture county average land value per acre as a measure of size. The sample size for the 2025 Agricultural Land Values and Technology Use is approximately 29,000.

Data Collection: All Regional Field Offices (RFO) use the same standardized questionnaire for data collection. For consistency across modes, the paper version is considered the master questionnaire and the Computer Assisted Self Interview (CASI), mobile Computer Assisted Telephone Interview (mCATI), and Computer Assisted Telephone Interview (CATI) instruments are built to model the paper questionnaire. The questionnaire content and format are evaluated annually through a specifications process where requests for changes are evaluated and approved or disapproved. Input may vary from question wording or formatting to a program change involving the deletion or modification of current questions or addition of new ones. If there are significant changes to either the content or format proposed, a NASS survey methodologist will pre-test the changes for usability. Prior to the start of data collection, all modes of instruments are reviewed, and CASI, mCATI, and CATI instruments are thoroughly tested.

All federal data collections require approval by the Office of Management and Budget (OMB). NASS must document the public need for the data, apply sound statistical practice, prove the data does not already exist elsewhere, and ensure the public is not excessively burdened. The questionnaires must display an active OMB number that gives NASS the authority to conduct the survey, a statement of the purpose of the survey and the use of the data being collected, a response burden statement that gives an estimate of the time required to complete the form, a confidentiality statement that the respondent's information will be protected from disclosure, and a statement saying that response to the survey is voluntary and not required by law.

Sampled operations receive a cover letter with the questionnaire mailing explaining the survey and providing instructions for completing the survey (via CASI) on the internet. The letter also notifies them that they will be contacted for survey purposes only if they do not return the questionnaire by mail or complete the survey on the web. All modes of data collection, except face-to-face enumeration, are utilized for each survey. Data collection is coordinated for any sampled operations that are in multiple on-going surveys.

Survey Edit: As survey data are collected and captured, data are edited for consistency and reasonableness using automated systems. The edit logic ensures administrative coding follows the methodological rules associated with the survey design. Relationships between data items on the current survey are verified. Some data items in the current survey are compared to data items from earlier surveys to ensure certain relationships are logical. The edit will determine the status of each record to be either "dirty" or "clean" (i.e., failing or passing the edit requirements for consistency and reasonableness). Records that fail edit requirements must be updated or must be certified by an analyst to be exempt from the failed edit requirement. Only records that pass edit requirements are eligible for final summary.

Analysis Tools: Edited data are processed through an interactive analysis tool which displays data for all reports by item. The tool provides scatter plots, tables, charts, and special tabulations that allow the analyst to compare an individual record to similar records. Outliers and unusual data relationships become evident, and RFO and Headquarters (HQ) staff review them to determine if they are correct. The tool allows comparison to an agricultural operation's previously reported data to detect large changes in the operation. Data found to be in error are corrected, while accepted data are retained.

Non-sampling Errors: Non-sampling errors are present in any survey process. These errors include reporting, recording, and editing errors. Steps are taken to minimize these errors, such as comprehensive interviewer training, validation and verification of processing systems, application of detailed computer edits, and evaluation of the data via the analysis tools.

Estimators: Response to the Agricultural Land Values and Technology Use Survey is voluntary. Some producers refuse to participate in the survey, others cannot be located during the data collection period, and some submit incomplete reports. These nonrespondents must be accounted for if accurate estimates of cash rental rates are to be made. Nonresponse adjustments are made through reweighting techniques applied to the data from reporting farms and ranches.

Each farm and ranch in the sample has an initial sampling weight. This is the inverse of the sampling fraction. For example, if a stratum has 1,000 farms in the population and 200 are sampled for this survey, each sampled farm has a weight of 5. In other words, each sampled farm represents 5 farms. The nonresponse adjustment occurs by stratum as the bounded strata represent homogeneous groupings of similar sized farms. The adjustment is also performed by individual item on the questionnaire, so adjustments for item nonresponse (partial reports) and unit nonresponse (refusals and inaccessibles) are done in a single calculation. Using the previous example, if 180 of the original 200 respond, the weights of the 180 will be adjusted to 1,000 divided by 180, or 5.56.

Point estimates, called direct expansions, are calculated by multiplying the reported value by the nonresponse adjusted weight and summing to a stratum total. A variance estimate is also computed at the stratum level. Totals and variances are additive across strata to form a state estimate, and states are additive to a National estimate. Ratio estimates are also computed for many items. For example, cropland value per acre can be estimated as a ratio of cropland value to cropland acres. Ratio estimates use the reweighted estimator described above for the numerator and denominator. Both the numerator and denominator must be complete for that record to be included in the ratio estimator.

Estimation: When all samples are accounted for, all responses are fully edited, and the analysis material reviewed, each RFO executes summaries that generate state level totals and ratios. Since all RFOs conduct identical surveys, the State data can be summarized and National survey point estimates, or indications, computed. RFOs are responsible for performing a detailed review of the survey data for States within their regions. Any irregularities revealed by the analysis must be investigated and, if necessary, resolved. The summary results provide multiple ratio indications for each data series being estimated. RFOs interpret the survey indications and submit State recommendations to NASS headquarters, providing justification in cases where recommendations deviate from survey results.

For the National estimates, NASS assembles a panel of statisticians to serve as the Agricultural Statistics Board (ASB) which reviews the National results and establishes the National estimates. Since larger sample sizes yield more precise results, NASS employs the "top-down" approach by determining the National estimates first and reconciling the State recommendations to the National estimate. Using the acreage for each type of land for each State as a weight, State land value estimates are weighted to the National estimate. The ASB also enjoys an advantage in being able to examine results across States and compare the State recommendations. The same estimators used in the State summaries are produced by the National summary. The ASB follows the same approach the RFOs do in determining the National estimate. The

historical relationship of the survey estimates to the official estimate is evaluated over time to determine accuracy and bias using tables and graphs. Each ASB member completes an independent interpretation of the survey results which are shared with the other members, and a consensus is reached. Often the State recommendations weighted by acreage do not equal the National estimate. ASB members must reexamine the State results and revise some States to make the product of the State estimates agree with the National estimate.

Survey Methodology for Land Values Prior to 2025: Prior to 2025, land values data were collected annually by NASS as part of the June Area Survey. More information on the methodology and quality measures for land values in previous survey cycles can be found on the NASS Methodology and Quality Measures webpage for Land Values at: https://www.nass.usda.gov/Publications/Methodology_and_Data_Quality/Land_Values/index.php

Quality Metrics for Land Values

Purpose and Definitions: Under the guidance of the Statistical Policy Office of the Office of Management and Budget (OMB), the United States Department of Agriculture's National Agricultural Statistics Service (NASS) provides data users with quality metrics for its published data series. The metrics tables below describe the performance data for the survey contributing to the publication. The accuracy of data products may be evaluated through sampling and non-sampling errors. The measurement of error due to sampling in the current period is evaluated by the coefficient of variation for each estimated item. Non-sampling error is evaluated by response rates.

Sample Size is the number of observations selected from the population to represent a characteristic of the population. Operations that did not have the item of interest or were out of business at the time of data collection have been excluded.

Response rates are the proportion of the above sample that completed the survey.

Coefficient of Variation provides a measure of the size for the standard error relative to the point estimate and is used to measure the precision of the results of a survey estimator.

Agricultural Land Values and Technology Use Survey Sample Size and Response Rates: To assist in evaluating the performance of the estimates in the *Land Values* report, the sample size and response rate are displayed.

Agricultural Land Values and Technology Use Survey Sample Size and Response Rate – Region, State, and United States: 2024 [1] and 2025

Region and State	Sample size		Response rate	
	2024	2025	2024	2025
	(number)	(number)	(percent)	(percent)
Northeast	980	2,948	57.0	32.9
Connecticut	13	242	92.3	33.1
Delaware	48	238	6.3	20.6
Maine	42	236	61.9	29.7
Maryland	153	235	54.2	36.2
Massachusetts	15	245	60.0	37.1
New Hampshire	5	229	40.0	36.7
New Jersey	49	235	83.7	27.7
New York	224	427	62.5	33.7
Pennsylvania	367	375	58.6	34.4
Rhode Island	9	245	22.2	33.5
Vermont	55	241	47.3	37.3
Lake	2,679	2,267	57.2	35.4
Michigan	599	562	65.8	32.4
Minnesota	1,416	1,062	55.7	35.1
Wisconsin	664	643	52.6	38.6
Corn Belt	6,414	5,252	52.3	34.5
Illinois	1,696	1,057	45.9	33.3
Indiana	914	909	61.6	31.6
Iowa	1,560	1,064	48.7	35.5
Missouri	1,213	1,065	50.7	36.1
Ohio	1,031	1,157	62.1	35.5
Northern Plains	5,177	4,002	37.9	33.9
Kansas	1,535	1,066	28.9	32.1
Nebraska	1,226	1,058	41.8	28.4
North Dakota	1,305	960	42.4	38.2
South Dakota	1,111	918	40.8	37.8
Appalachian	2,804	2,558	52.2	35.4
Kentucky	762	660	51.3	34.4
North Carolina	562	563	42.5	30.7
Tennessee	887	728	54.7	37.4
Virginia	360	320	41.1	37.2
West Virginia	233	287	85.8	39.7

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Agricultural Land Values and Technology Use Survey Sample Size and Response Rate – Region, State, and United States: 2024 [1] and 2025 (continued)

Region and State	Sample size		Response rate	
	2024	2025	2024	2025
	(number)	(number)	(percent)	(percent)
Southeast	1,303	1,394	52.4	35.3
Alabama	407	359	66.6	36.5
Florida	201	286	45.3	31.8
Georgia	523	505	44.6	33.9
South Carolina	172	244	51.2	40.6
Delta	1,519	1,331	64.8	36.1
Arkansas	726	572	62.0	35.3
Louisiana	259	239	59.1	35.1
Mississippi	534	520	71.3	37.3
Southern Plains	3,965	2,413	45.3	32.5
Oklahoma	1,075	966	37.7	31.6
Texas	2,890	1,447	48.2	33.1
Mountain	2,722	4,815	54.9	41.3
Arizona	122	570	74.6	35.3
Colorado	603	576	54.9	41.1
Idaho	517	853	37.9	36.9
Montana	711	1,041	65.7	42.7
Nevada	46	292	4.3	37.3
New Mexico	287	581	59.6	40.1
Utah	276	664	60.1	50.8
Wyoming	160	238	43.8	47.1
Pacific	1,545	1,495	56.4	39.9
California	674	643	65.9	40.1
Oregon	412	422	51.9	42.7
Washington	459	430	46.4	36.7
United States	29,108	28,475	50.5	35.8

[1] 2024 sample size and response rate are from the June Area Survey.

Quality Metrics for Land Values – Region, State, and United States: 2024 and 2025

Region and State	Coefficient of variation					
	Farm real estate		Cropland		Pasture	
	2024	2025	2024	2025	2024	2025
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Northeast	15.4	7.4	9.1	7.3	11.1	10.5
Connecticut	5.8	32.1	(NA)	23.9	(NA)	35.1
Delaware	(NA)	25.9	(NA)	17.0	(NA)	33.6
Maine	46.7	31.7	(NA)	10.9	(NA)	31.8
Maryland	4.5	12.5	17.6	4.8	(NA)	26.4
Massachusetts	0.3	21.5	(NA)	23.8	(NA)	25.2
New Hampshire	(NA)	20.3	(NA)	29.4	(NA)	22.3
New Jersey	1.6	19.1	(NA)	12.6	(NA)	30.0
New York	6.8	13.7	26.5	12.2	4.5	14.4
Pennsylvania	7.0	13.7	7.3	12.2	7.6	18.0
Rhode Island	(NA)	70.8	(NA)	28.0	(NA)	36.0
Vermont	6.0	23.2	(NA)	5.4	(NA)	16.8
Lake	1.2	5.3	1.2	3.9	3.0	8.6
Michigan	2.7	10.2	2.2	7.0	3.5	24.1
Minnesota	1.4	8.1	1.5	5.6	2.5	9.9
Wisconsin	3.1	7.0	2.9	6.4	3.1	18.1
Corn Belt	0.7	3.0	0.6	2.7	4.6	6.1
Illinois	0.9	4.3	0.8	4.4	1.7	25.2
Indiana	1.5	9.2	1.5	7.6	5.1	11.4
Iowa	0.8	6.1	0.9	5.3	1.1	14.4
Missouri	1.7	5.6	1.4	7.9	4.7	6.9
Ohio	3.2	5.5	2.6	4.8	17.9	6.3
Northern Plains	1.2	6.9	1.1	4.0	1.7	7.4
Kansas	1.2	20.2	1.8	9.9	2.1	6.9
Nebraska	3.2	12.5	2.8	8.7	4.3	16.0
North Dakota	1.3	5.7	1.4	5.2	1.3	7.6
South Dakota	2.1	9.0	2.1	7.1	3.6	9.7
Appalachian	1.7	5.2	1.1	7.6	3.0	6.7
Kentucky	2.5	9.5	1.5	10.7	3.6	8.7
North Carolina	4.7	11.1	3.1	14.0	4.1	9.4
Tennessee	2.5	11.5	1.9	8.7	4.9	18.9
Virginia	2.2	8.6	2.5	12.6	1.8	14.1
West Virginia	5.8	14.2	6.0	15.9	4.7	22.6

See footnote(s) at end of table.

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Quality Metrics for Land Values – Region, State, and United States: 2024 and 2025 (continued)

Region and State	Coefficient of variation					
	Farm real estate		Cropland		Pasture	
	2024	2025	2024	2025	2024	2025
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
Southeast	3.0	49.9	4.0	8.6	3.8	22.2
Alabama	3.8	15.0	5.1	17.9	6.6	9.5
Florida	2.5	21.5	3.8	15.5	5.9	19.1
Georgia	7.6	8.7	3.0	7.2	13.2	22.6
South Carolina	5.0	32.2	2.7	16.5	5.7	18.8
Delta	0.8	10.7	0.9	13.1	1.6	9.2
Arkansas	0.8	8.7	1.3	10.5	1.5	10.3
Louisiana	1.9	25.0	1.5	28.9	3.2	19.4
Mississippi	1.8	7.4	1.8	6.4	1.9	6.2
Southern Plains	3.0	9.2	2.5	10.1	3.4	9.5
Oklahoma	4.9	10.9	1.9	7.3	3.2	8.2
Texas	3.5	11.5	3.1	13.3	4.0	11.6
Mountain	8.2	13.3	7.4	30.2	16.6	28.8
Arizona	1.5	43.1	(NA)	13.1	(NA)	18.5
Colorado	7.6	14.5	3.6	27.0	6.1	58.2
Idaho	13.1	14.3	8.8	11.8	5.8	23.8
Montana	6.7	13.6	4.5	10.4	7.8	15.5
Nevada	(NA)	78.3	(NA)	16.3	(NA)	33.9
New Mexico	0.1	24.2	10.2	32.3	(NA)	28.3
Utah	42.4	24.1	19.7	39.0	9.9	36.9
Wyoming	1.4	41.2	13.6	35.7	0.8	27.6
Pacific	5.1	16.0	3.3	25.8	9.2	21.9
California	7.0	14.6	2.3	22.9	10.9	26.2
Oregon	5.9	30.1	7.8	15.2	1.5	43.2
Washington	8.1	20.0	7.4	40.3	6.5	43.7
United States	1.5	37.3	0.8	5.4	4.2	6.3

(NA) Not available.

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.
- The national 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" in upper right corner above "search" box to create an account and select the reports you would like to receive.
- Cornell's Mann Library website houses NASS's and other agency's archived reports at https://usda.library.cornell.edu. All email subscriptions containing reports will be sent from https://usda.library.cornell.edu. To receive the reports via e-mail, you will have to go to the website and 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.

If you have specific questions you would like an expert to respond to, please visit our "Ask A Specialist" website at www.nass.usda.gov/Contact_Us/Ask_a_Specialist.