

2021 OHIO GRAPE GROWER SURVEY

Technical Appendix

August 2022

Background and Overview

Prior to 2018, a survey of grape growers was regularly conducted by the USDA National Agricultural Statistics on an annual basis in Ohio. Combined with results from the periodic US Census of Agriculture, these government reports allowed growers, wineries and other grape industry stakeholders to track trends in grape production in the state. The USDA discontinued annual survey data collection in 2018, and the every-5-year Agricultural Census includes less details and is not due to be conducted until 2022 (with results reported in 2024).

As a result, the Ohio Grape Industries Committee (OGIC) commissioned a confidential census survey of grape growers to be conducted by researchers at the Ohio State University. Dr. Douglas Jackson-Smith, a professor in the College of Food, Agricultural, and Life Sciences (CFAES) at OSU led the project.

Sample Frame

The 2021 Ohio Grape Grower Survey was designed to gather information about acres and production of grape varieties from all Ohio growers who maintained a grape vineyard in 2021. Since access to the USDA NASS sample frame was not possible, a list of all known Ohio grape producers was compiled from state agency records (e.g., licensed wineries with known vineyards, recipients of grape grower grants, etc.), online website searchers, and contact lists from OSU research and extension agents who work with the Ohio grape industry. This compiled list was examined to eliminate duplication of names and addresses.

The final list included 207 potential grape growers (200 with mailing addresses, and 7 with only email or telephone contact numbers).

Survey Instrument

The survey instrument was designed using input from OSU grape researcher and extension specialists and representatives of the OGIC.

The survey asked overall questions (did you plant or grow any grapes in Ohio in 2021; what are the total acres of grapes you grew in 2021, etc.) as well as detailed questions about the acres of bearing and nonbearing vineyards (and production in tons) for each major grape variety known to be raised in Ohio. The survey included a set of 68 distinct varieties, broken into tables for natives, hybrid red, hybrid white, vinifera, and table grapes) but also provided boxes for growers to list additional varieties. As noted in the full report, producers reported 112 distinct varieties. A copy of the survey instrument is provided below.

Survey Implementation Methods

The survey was implemented using a Modified Dillman Tailored Design Method¹. A combination of mail and online survey methods were used to collect data from producers.

Mail Surveys: For all those with mailing addresses, an advance letter was sent out to prospective respondents in mid-January 2022 informing them about the survey. One week later, a survey packet with a cover letter, background information sheet, paper copy of the survey, and postage paid return envelope was sent to all respondents. Each survey in the first wave also included a \$20 bill as an incentive for the respondents to answer the survey. As a follow up to first wave surveys, a reminder card was sent to respondents two weeks later (in the first half of February). A second and third wave of the paper survey packets (without the financial incentive) were mailed to non-respondents in March (and again in early May) to provide additional opportunities for growers to reply.

Internet Surveys: Growers who had not returned their paper surveys by late March were sent an email reminder and invitation to complete an online version of the survey in early April 2022. The online survey instrument was designed to replicate the questions and answer format from the paper survey and implemented using Qualtrics. Two scheduled reminder emails were sent to nonrespondents 3 and 8 days after the initial email invitation. In addition, the seven growers with no mailing address were sent an email invitation and link to the Qualtrics survey in early April, followed by three reminder emails spaced out over the next 2 weeks.

Non-Response Phone Calls: To gather information from non-respondents (and assess potential nonrespondent bias), in early July 2022 the team made phone calls to all non-respondents for whom we had phone numbers (n=26). Of these, we reached 15 individuals; 11 provided information over the phone to complete the survey, one confirmed they raised grapes but refused to provide information, and three indicated that they did not raise grapes and did not qualify for the study. There were no distinguishing characteristics of phoned nonrespondents compared to the original mail/online survey respondent pool.

Response Rate

Of the original sample of 207 potential grape growers, 29 (or 14%) were disqualified from the study because they did not operate a grape vineyard in 2021 (n=19), were no longer at the address (n=8) or were inadvertently given a duplicate survey (n=2). The remaining qualified 178 farms served as the adjusted basis for estimating sample rates.

We received a total of 148 completed surveys. This includes 120 surveys returned by mail, 24 who completed a survey online, and 11 who provided information over the phone. Seven growers completed both a paper and online survey (in all cases, we used the paper version).

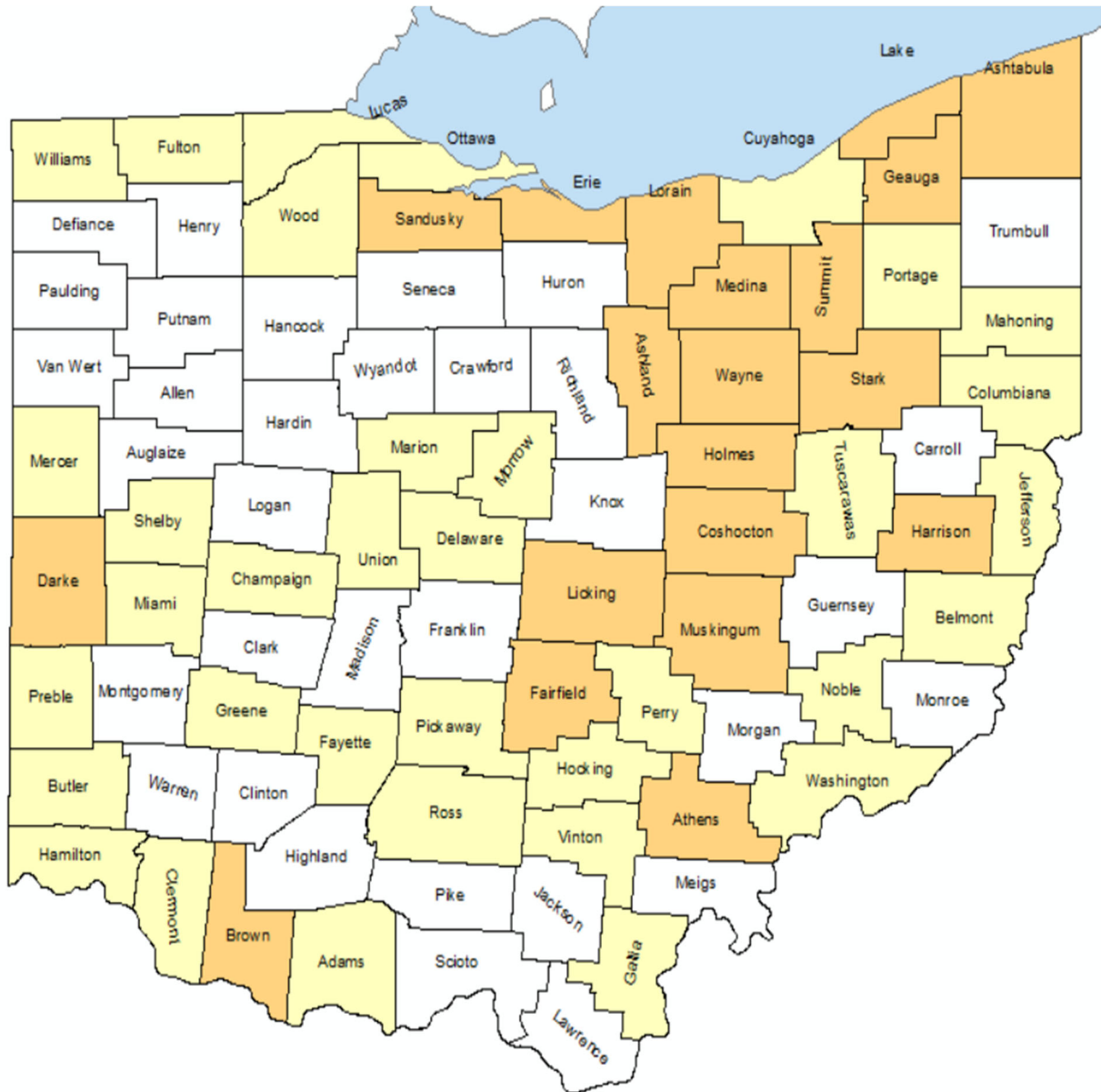
This produced an adjusted **response rate of 83.1%** (148/178).


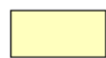

Of the 30 people who did not provide a response, one contacted us to refuse, and 29 never answered mailing, emails, or phone calls. Based on the results of the nonrespondent phone calls (see above), we believe 75% (n=22) were likely to have grown grapes. For this report, we did not attempt to estimate the acreage (overall and/or by variety) associated with nonrespondents.

¹ Dillman, D.A., J.D. Smyth, and L.M. Christian. 2014. Internet, Phone, Mail, and Mixed-Mode surveys. Wiley.

2021 Ohio Grape Grower Survey

RESPONSES BY COUNTY



-  No farms reporting
-  Less than 3 farms reporting
-  3 or more farms reporting

Data Entry and Cleaning

Data curation, cleaning, and analysis were performed in the second half of July and first week of August 2022. Responses received in paper surveys and telephone calls were manually entered into Qualtrics and a combined dataset of responses from all three modes (i.e., paper surveys, telephone calls and online version) was created for cleaning and analysis. A code book mapping the different elements- variable names, variable labels, question numbers and associated question statements- was prepared to clearly establish one-to-one correspondence between these elements and for better understanding of the datasheet.

Internal Consistency Checks: As surveys were received, farmer information about grape variety acreage and production were manually checked for internal consistency. In particular, we compared the total acres of bearing, nonbearing, and overall acres of grape vineyards (on the first page) with the sum of total acres in each category reported for each individual grape variety listed in the survey. Inconsistent responses were found on 17 surveys and manually corrected before data entry. Specifically, if the sum of bearing and nonbearing acres listed for individual varieties was less than total aggregate bearing and nonbearing acres listed on the first page(Q3), precedence was given to Q3, and an estimate of ‘other residual acres’ were assigned to the farm. Across the entire sample, a total 1198 acres were reported as associated with individual varieties, and a total of 24 acres (2% of the total) were estimated as residual acres.

Missing Data Imputation: Most producers provided complete information about acreage and production for all of the varieties listed in their survey. For a handful of key variables, however, we needed to impute values to complete the final report tables.

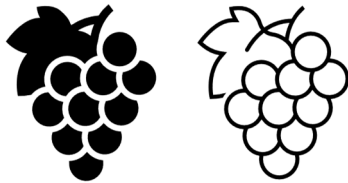
Attributes of Vineyards and Grapes: When we had residual acres, we estimated whether or not they were bearing or nonbearing based on the proportion of bearing (vs. nonbearing) acres reported elsewhere in the same survey. A similar approach was taken to assign attributes – category, color, and use – to acres of grapes in the residual category. In each case, the proportion of Hybrid/Native/Vinifera, Red/White, and Wine/Juice/Table grapes from the reported varieties for the individual producer was used to allocate the residual grape acreage appropriately.

Production levels: On 23 of the 148 surveys, producers reported acres of bearing vines for at least one particular variety, but did not report any production value (in tons) for that variety.² In cases where production data was missing, we imputed a value based on the reported average production levels for that variety (a) first from the sample median based on responses for this variety among our respondents (if available), (b) next from published average yield estimates for that variety in regional extension publications, and (c) finally based on an estimated ‘average yield’ for all reported varieties in the sample (as a last resort). The average yield level we used for this last case was 2.44 tons/acre. Overall, our report includes directly reported production of 2,948 tons (89% of total reported tons) and estimates for missing production for specific varieties for a total of 313 tons (11% of the total).

All analysis was performed using Statistical Package for Social Science (SPSS) tool.

² It is worth noting that some producers reported ‘zero’ production for their bearing acres. This was typically accompanied by a note indicating that they were unable to find labor to harvest the grapes, lost the crop due to weather, disease, or pests, or had other logistical barriers that led to no grapes being taken from the vines (despite being bearing in 2021). We did not impute production levels for these fields, but report total harvested yields in the full report (including cases where they had bearing vines but were not able to get a harvest).

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This survey is designed to collect basic information about the planted and harvested acres of various varieties of grapes grown in 2021 in Ohio. In 2017, the USDA National Agricultural Statistics Service dropped Ohio from its regular grape producer census. To provide updated and comprehensive information for use by Ohio grape growers and vineyards, the Ohio Grape Industry Council has asked researchers at the Ohio State University to conduct a comprehensive survey of the industry.

In the questions below, we ask that you focus on acres and production of wine, juice, and table grapes that you grew and managed in 2021. If you are the owner of a vineyard that was managed by someone else – please write the name and contact information (address & email) of that manager below and return the survey to us in the enclosed envelope.

Vineyard Manager Name and Contact Info: _____

1. Did you plant or grow any wine, juice, or table grape varieties in Ohio in 2021?

YES (*continue*) NO → *please return the survey in the enclosed prepaid envelope.*

2. What is the total acreage of grapes you grew in 2021? *Include wine, juice or table grapes.*

a. Nonbearing vines: _____ acres

b. Bearing vines: _____ acres

c. Total acres (a+b): _____ acres

3. In what county did you grow most of your grapes in 2021? _____

Next, we would like to ask for some information about the specific wine and juice grape varieties you grew in 2021. We begin with native varieties, then ask about hybrids and vinifera.

4. Did you grow any NATIVE grape varieties in 2021?

- YES (continue) NO → Skip to Question 6 on the next page.

5. How many ACRES of each of the following NATIVE grape varieties did you grow in 2021, and what was your estimated total production from each variety? In your answers, please separate nonbearing and bearing grape vines, as well as the total combined acres. If you raised a variety for use as juice – please list that separately from wine grapes.

	NONBEARING		BEARING		TOTAL ACRES (combined bearing and nonbearing)
	Acres of newly planted vines in 2021	Other nonbearing acres in 2021	Acres of grapes harvested in 2021	Estimated production in 2021 (TONS)	
Catawba - JUICE					
Catawba – WINE					
Concord – JUICE					
Concord – WINE					
Delaware					
Fredonia					
Norton (Cynthiana)					
Steuben					
Marquis					
Niagara - JUICE					
Niagara – WINE					
Other Natives (specify):					
Other Natives (specify):					

6. Did you raise any HYBRID RED grape varieties in 2021?

- YES (continue) NO → Skip to Question 8 on the next page.

7. How many ACRES of each of the following HYBRID RED grape varieties did you grow in 2021, and what was your estimated total production from each variety? *In your answers, please separate nonbearing and bearing grape vines, as well as the total combined acres.*

	NONBEARING		BEARING		TOTAL ACRES <i>(combined bearing and nonbearing)</i>
	Acres newly planted vines in 2021	Other nonbearing acres in 2021	Acres grapes harvested in 2021	Estimated production in 2021 (TONS)	
HYBRID REDS					
Arandell					
Baco Noir					
Chambourcin					
Chancellor					
Corot Noir					
Crimson Pearl					
DeChaunac					
Foch (Marechal)					
Frontenac					
Leon Millot					
Marquette					
Noiret					
Petite Pearl					
Regent					
St. Croix					
Verona					
Other hybrid red:					
Other hybrid red:					

8. Did you raise any HYBRID WHITE grape varieties in 2021?

YES (continue)

NO → Skip to Question 10 on the next page.

9. How many ACRES of each of the following HYBRID WHITE grape varieties did you grow in 2021, and what was your estimated total production from each variety? *In your answers, please separate nonbearing and bearing grape vines, as well as the total combined acres.*

	NONBEARING		BEARING		TOTAL ACRES <i>(combined bearing and nonbearing)</i>
	Acres newly planted vines in 2021	Other nonbearing acres in 2021	Acres grapes harvested in 2021	Estimated production in 2021 (TONS)	
HYBRID WHITES					
Aromella					
Aurore					
Brianna					
Cayuga White					
Chardonel					
Edelweiss					
Frontenac Blanc					
Frontenac Gris					
Itasca					
La Crescent					
La Crosse					
Prairie Star					
Seyval Blanc					
Traminette					
Vidal Blanc					
Vignoles					
Other hybrid white:					
Other hybrid white:					

10. Did you raise any VINIFERA grape varieties in 2021?

YES (*continue*) NO → *Skip to Question 12 on the next page.*

11. How many ACRES of each of the following VINIFERA grape varieties did you grow in 2021, and what was your estimated TOTAL PRODUCTION from each variety?

	NONBEARING		BEARING		TOTAL ACRES <i>(combined bearing and nonbearing)</i>
	Acres newly planted vines in 2021	Other nonbearing acres in 2021	Acres grapes harvested in 2021	Estimated production in 2021 (TONS)	
<u>VINIFERA</u>					
Cabernet Franc					
Cabernet Sauvignon					
Dornfelder					
Gamay Noir					
Lemberger					
Malbec					
Merlot					
Petit Verdot					
Pinot Noir					
Saperavi					
Syrah					
Chardonnay					
Gewurtztraminer					
Gruner Veltliner					
Pinot Gris (Grigio)					
Riesling					
Sauvignon Blanc					
Semillon					
Viognier					
Other:					
Other:					

12. Did you raise any TABLE GRAPE varieties in 2021?

YES (continue) NO → Skip to Question 14 below.

13. How many acres of each of the following TABLE GRAPE varieties did you grow in 2021, and what was your estimated total production from each variety? Do not double count acres grown for juice or wine production that were reported above.

	NONBEARING		BEARING		TOTAL ACRES (combined bearing and nonbearing)
	Acres newly planted vines in 2021	Other nonbearing acres in 2021	Acres grapes harvested in 2021	Estimated production in 2021 (TONS)	
VARIETIES					
Campbell Early					
Canadice					
Concord (TABLE)					
Everest					
Himrod					
Jupiter					
Lakemont					
Marquis (TABLE)					
Mars					
Neptune					
Niagara (TABLE)					
Reliance					
Other (specify):					
Other (specify):					

14. Are there any other acres of grapes you raised in 2021 that were not listed above?

YES: please list the varieties, acres, and production here:

Variety: _____ acres: _____ production: _____

Variety: _____ acres: _____ production: _____

NO → you are done!

**We thank you for taking the time to complete this survey.
Please return it in the enclosed prepaid envelope.**