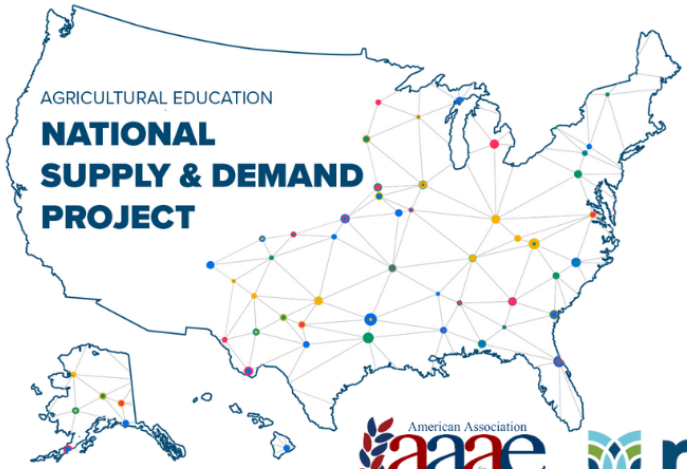
STATUS OF THE U. S. SUPPLY AND DEMAND FOR SCHOOL-BASED AGRICULTURAL EDUCATION TEACHERS 2020-2022



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Status of the U. S. Supply and Demand for School-Based Agricultural Education Teachers 2020-2022

Suggested Citation:
Smith, A. R., Foster, D. D., Lawver, R. G., Rogers, A., & Spiess, M. (2025). Status of the U.S. Supply and Demand for Teachers of Agricultural Education, 2020 - 2022. http://aaaeonline.org/Teacher-Supply-and-Demand.

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Summary

The Status of the U.S. Supply and Demand for School-Based Agricultural Education Teachers, 2020–2022 provides a comprehensive analysis of national trends in the preparation, placement, and retention of school-based agricultural education (SBAE) teachers. Conducted in collaboration with AAAE, NAAE, NASAE, and other stakeholder organizations, this longitudinal study continues a legacy of national reporting that began in 1965. Using survey data from teacher preparation institutions and state agricultural education leaders, the study identifies critical shifts in teacher supply and demand during a period marked by the COVID-19 pandemic.

Key findings indicate that while the number of teacher preparation programs and program completers has increased modestly, demand continues to outpace supply, resulting in persistent teacher shortages across many states. The profession is experiencing demographic shifts, with women now representing the majority of program completers and SBAE teachers nationwide. However, racial and ethnic diversity among new teachers remains limited. The study also highlights a growing reliance on alternatively certified teachers and documents an upward trend in the "yield" of program completers entering the profession, reaching 79% in 2022.

Challenges persist due to declining faculty capacity (FTEF), uneven regional participation, and barriers to consistent data collection. Recommendations include enhancing faculty resources, strengthening recruitment and retention strategies, and improving pathways for diverse teacher candidates. This report serves as a vital resource for educational leaders, policymakers, and teacher educators working to sustain and grow the SBAE profession.

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Acknowledgments

The research team extends sincere appreciation to the individuals and organizations whose support made this project possible. We are especially grateful to the American Association for Agricultural Education (AAAE) and its Member Services Committee, the National Association of Supervisors of Agricultural Education (NASAE), the National Association of Agricultural Educators (NAAE), the National FFA Organization, and the many universities agricultural teacher educators who contributed expertise, insights, and data.

We also recognize the foundational contributions of leaders like Bill Camp and Adam Kantrovich, whose dedication to agricultural education laid the groundwork for this study.

Finally, we thank our home institutions for their ongoing support and for providing the resources necessary to carry out this work.

Researcher Contextual Statement

Since 2014, this research team has conducted the Supply and Demand Study as a multi-institutional collaboration, ensuring the annual collection of accurate data on school-based agricultural education. From 2014 to 2020, Drs. Foster, Lawver, and Smith provided expertise, resources, and long-term commitment to the project. In 2020, the team successfully responded to a RFP, securing an extension through 2026. To enhance data accessibility and timeliness, Dr. Michael Spiess joined the team in 2022.

Daniel Foster is an Associate Professor in the Department of Agricultural Economics, Sociology, and Education at Pennsylvania State University serving as an Agricultural Teacher Educator. Daniel is also the co-founder of the Global Teach Ag Network and actively engages in research on effective agricultural education in secondary and post-secondary settings, specifically teacher professional development, communities of practice and global learning in agricultural education.

Rebecca Lawver is a Professor and Department Head of the Applied Science, Technology, & Education Department at Utah State University. Rebecca provides leadership, instruction, and advising in the ASTE graduate and undergraduate programs. Her research focuses on the professional development of agricultural educators across secondary, post-secondary, and non-formal education settings, with an emphasis on needs assessment, recruitment and retention, agricultural safety, and effective teaching practices. Rebecca has been active in the professional work of the AAAE as past president, VP communication, secretary, and has served on several committees and working groups. Rebecca has been active in the professional work of the AAAE as past president, VP Communication, and secretary and has served on several committees and working groups.

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agricultural education. Amy is committed to providing service and professional development to both pre-service and in-service school-based agricultural education teachers. She strives to address the pressing shortage of teachers and works to diversify the agricultural education profession by engaging new and diverse audiences in agriculture, food, and natural resource (AFNR) education. Additionally, she is the Director for the Minnesota AFNR Teacher Induction Program.

Michael Spiess is Professor Emeritus of Agricultural Education and Agricultural Engineering Technology at California State University, Chico. Mike has studied California teacher demographics and trends for over 20 years. He designed and managed the original online data collection system used to collect secondary agricultural program data for California. He has served as Program Coordinator (chair) and Associate Dean of the College of Agriculture. Mike has served in the AAAE Western Region chairs and as the VP of Communications.

Ashley Rogers is a National Association of Agricultural Educators Program Manager-Professional Development & Teacher Recruitment and Retention. Ashley works primarily with programming related to professional development for agricultural educators as well as NAAE's teacher recruitment and retention efforts. Her research centers on agriculture teacher retention and high-quality professional development. Ashley manages NAAE's State Teach Ag Results (STAR) program, a national initiative designed to recruit, retain, and recognize high quality and diverse educators.

The research team brings energy, commitment, and a history of active involvement in national agricultural education initiatives, fostering a strong professional network. Their institutional affiliations enhance collaboration with state and national leaders. Notably, the team represents three NAAE regions (PSU: Region 6; UM: Region 3; USU & CSU, Chico: Region 1), two AAAE regions (North-Central and Western), and three FFA regions (Pennsylvania: Region VI; Minnesota: Region III; Utah & California: Region I).

Known Limitations

This project relies on data reported by state and institutional partners through annual collection efforts. Because data collection processes vary across states and institutions, multiple attempts were made to gather information. However, some data remain unaccounted for, and factors outlined in the conceptual framework (e.g., educational policy, state and federal funding) fall beyond the project's scope.

Readers should interpret findings within these constraints and exercise caution when comparing data across years, as the number of reporting states and institutions varies. When feasible, we include the number of reporting entities for context.

The research team welcomes collaboration and encourages colleagues to share relevant data collected at smaller scopes to enhance understanding of national supply and demand trends in school-based agricultural education.

Introduction

The "Supply and Demand Study" has been an ongoing initiative of the American Association for Agricultural Education (AAAE) in collaboration with school-based agricultural education stakeholder groups since 1965. In 2015, the National Teach Ag Campaign formalized a partnership with AAAE to further enhance and support this project.

The teacher shortage in the United States is a widely acknowledged yet insufficiently understood crisis (Garcia & Weiss, 2019a). This complex issue encompasses various factors, including teacher recruitment and retention. Current national estimates likely underestimate the severity of the shortage, as they fail to account for disparities in teacher qualifications and the uneven distribution of highly qualified educators between high- and low-poverty schools (Garcia & Weiss, 2019a). Additionally, schools are struggling to fill teacher vacancies, often leaving positions unfilled despite active recruitment efforts (Garcia & Weiss, 2019b). Beyond low salaries (Garcia & Weiss, 2019c), teacher working conditions and overall school climate significantly influence retention rates (Garcia & Weiss, 2019c).

These challenges similarly impact the agricultural education profession. A study conducted by the U.S. Department of Education from 1990 to 2018 identified 21 states with a high demand for school-based agricultural education teachers, beginning in 1997 (Cross, 2017). Over this period, more than half of these states experienced multiple years of agriculture teacher shortages (Cross, 2017). Understanding who is teaching school-based agricultural education and whether the supply meets demand is essential for teacher educators, students, parents, policymakers, and other stakeholders (Lawver et al., 2018). The National FFA Organization (2017) reinforced this concern, identifying the shortage of qualified teachers as the greatest challenge facing school-based agricultural education.

Since 1965, the national study of supply and demand for agricultural education teachers has been supported and facilitated by AAAE. This initiative builds upon a century of research on teacher shortages and workforce development (Bricker, 1914; Camp, 2000; Camp et al., 2002; Kantrovich, 2010; Swanson, 1942; True, 1929). The project team continues to provide critical programmatic data to help stakeholders systematically address the supply and demand of agricultural educators. If effective interventions are implemented, future supply and demand studies can document their impact (Eck & Edwards, 2019).

By assessing the current state of supply and demand within school-based agricultural education, the conversation around intervention strategies and policy development can be refined. Research suggests five key strategies to address teacher shortages: strengthening teacher preparation, improving hiring practices, increasing compensation, providing support for new teachers, and enhancing working conditions (Podolsky et al., 2016). Leaders in agricultural education, in collaboration with stakeholders, must work to identify and implement contextually relevant strategies to address this ongoing challenge effectively.

COVID-19 Effect

This report spans the COVID-19 pandemic, which impacted survey response rates and teacher supply. Response rates declined nationally in 2021, consistent with trends in online educational surveys (Shrivastava & Shrivastava, 2021; Krieger et al., 2023).

The pandemic also affected agricultural teacher supply. While initial turnover remained stable, a 20% increase occurred entering the 2022-2023 school year, with more teachers leaving or transitioning to non-teaching roles in Arkansas (Camp et al., 2024). California districts faced severe staffing shortages (Carver-Thomas et al., 2022). Teacher preparation programs saw disruptions, including reduced student-teaching requirements, though the long-term impact on enrollment remains uncertain (Choate et al., 2021).

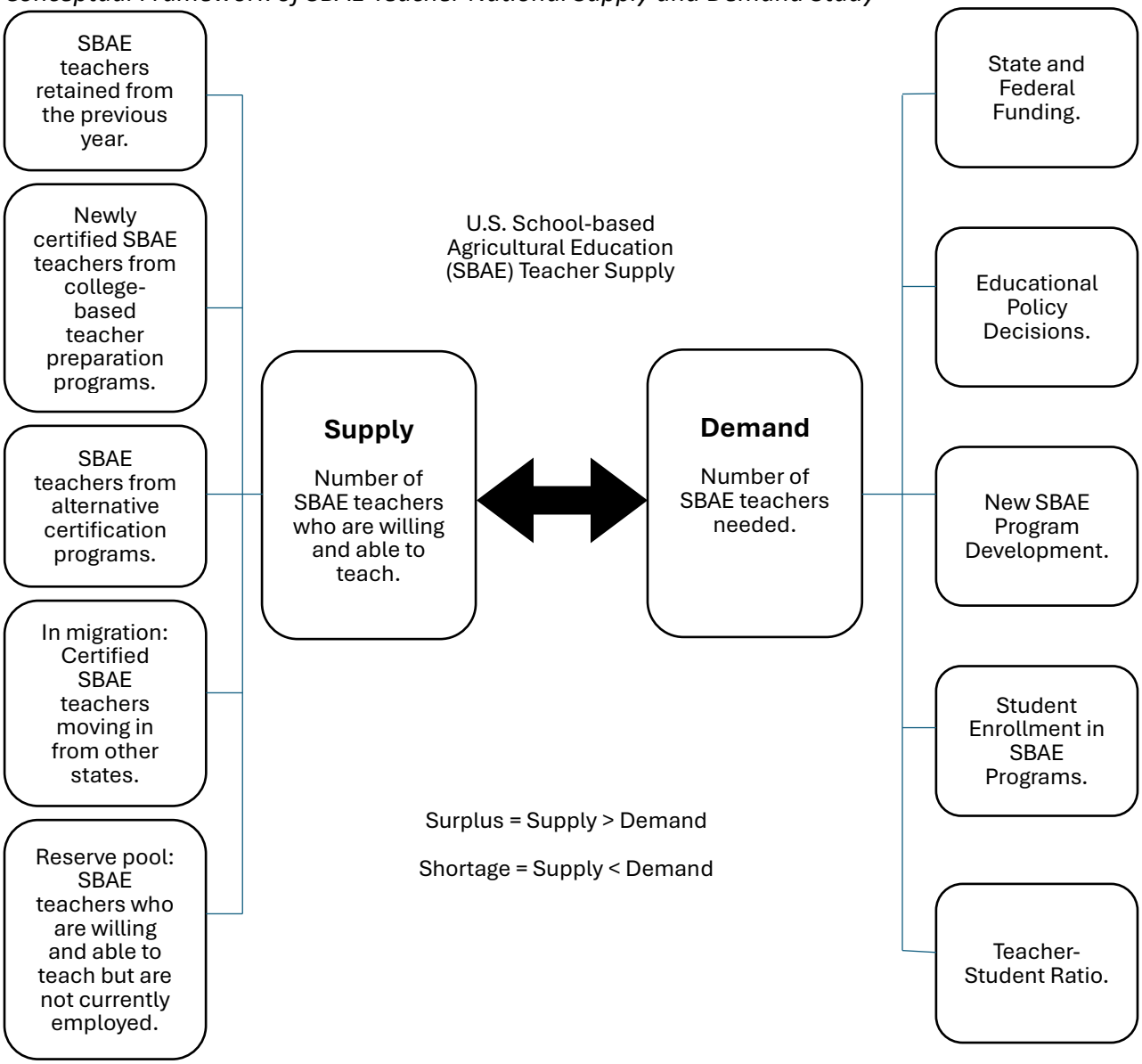
Undergraduate interest in teaching has been mixed—respect for the profession increased, but concerns over salary, safety, workload, and disrespect grew (Bill et al., 2022). These trends could have lasting effects on teacher quality, diversity, and experience.

Conceptual Framework

The model shown in Figure 1 as adapted from Lindsay et al. (2009) serves as a guide for this study. However, the study only collects data from state agricultural education staff and university teacher preparation programs, and therefore, does not address all aspects of the model. Specifically excluded are the effects of policy and funding.

Figure 1

Conceptual Framework of SBAE Teacher National Supply and Demand Study



Purpose

The purpose of the Supply and Demand for Teachers of Agricultural Education project is to provide agricultural education stakeholders and supporters with current, accurate estimates of the supply and demand for school-based teachers of agricultural education and data to guide meaningful policy decisions at all levels (Kantrovich, 2010). Further, data may be used by agriculture teacher educators, agricultural education organizations, and state agricultural education staff to support ongoing recruitment and retention efforts within school-based agricultural education.

Objectives

The overarching objective of the Supply and Demand project is to determine the availability of and need for school-based agricultural education teachers. Working with "Team Ag Ed" partners including the American Association for Agricultural Education (AAAE), National Association of Agricultural Educators (NAAE), National Association of Supervisors Agricultural Education (NASAE), National FFA, and National Teach Ag Campaign, the following objectives provided guidance for the study.

1. Describe historical trends of agricultural education in the United States (capacity of SBAE teacher preparation programs, number of licensed program completers, and number of completers who pursued careers in school-based agricultural education).
2. Describe the SBAE teacher preparation programs in the United States.
3. Describe characteristics of licensed program completers (gender, ethnicity, type of licensure program, anticipated post-graduation plans, etc.).
4. Describe the scope of SBAE teacher preparation programs in the United States.

Methods

This study built upon existing processes and protocols in place for the *Agricultural Education Supply and Demand* research developed over the last 57 years. The project team has worked to strengthen and streamline data collection for both supply and demand aspects of the study. The parameters for the study were submitted (#4564) to the Institutional Review Board for Human Subjects Research at The Pennsylvania State University and approved.

Supply

The population for the supply of school-based agricultural education teachers included university agricultural teacher educators from every institution that offered an agriculture teacher preparation program leading to teacher licensure. The number of institutions offering agriculture teacher preparation varies from year to year as new programs are added or defunct programs are closed. The supply survey collected data on university teacher education programs, the number of licensure program completers, and the employment plans of program completers.

Supply frame. An accurate and up-to-date frame of institutions was scrutinized annually prior to data collection. Each year, we sent an informative email containing a snapshot of the previous year's data and a list of institutions we planned to contact to enhance the trustworthiness of data collected. During data collection, the final item on the instrument requested the name and contact information for the institution's best contact for the following year. All institutions with a known and active teacher preparation program are included in the frame.

Supply instrumentation. As a legacy study, the starting point for each instrument was the set of questions asked in previous iterations of the instrument. Questions were added and revised based on current literature and feedback from a panel of agricultural teacher educator experts who reviewed the instrument for face, content, and construct validity. Reliability was checked annually and found to be appropriate for a descriptive study.

Demand

The population for the demand of school-based agricultural education teachers included state agricultural education leaders from all 50 states, Puerto Rico, and the Virgin Islands. The demand survey gathered information on existing and potential new programs, teacher counts, program types, projected retirements, and other factors influencing teacher demand.

Demand frame. An accurate and up-to-date frame of state agricultural education leaders was generated each year, with the original frame developed from membership in NASAE. National FFA State Relations Team regional specialists annually reviewed the frame for accuracy and assisted with identifying necessary changes. Prior to opening data collection each year, an informational email was sent with a state snapshot of the previous year's data and an indication of who would receive the request for state data. This allowed for any unknown changes in staff to be resolved prior to sending the survey link. During data collection, the final item of the instrument asked who the best contact for that state in the following year would be, if known.

Demand instrumentation. As this is a legacy study, the starting point for the instrument was the set of questions asked in previous supply and demand studies. Questions were added and revised based on current literature and feedback from a panel of state and national agricultural educator leaders who served to check face, content, and construct validity. Reliability was checked annually and found to be appropriate for a descriptive study.

Supply and Demand Data Collection

Preliminary data for both supply and demand were collected using an online Qualtrics survey. Procedures utilized Dillman's guiding principles for internet and mixed-mode data collection (Dillman, et al., 2014). Following dissemination of unique individual emails and reminders, the project team followed up with individual phone calls to non-respondents. Data was treated confidentially. We distributed both supply and demand surveys in the fall from 2020-2022, adhering to the data collection procedures set in 2015. Supplemental questions are included on the supply survey every three years to capture additional institutional data, such as

faculty appointments, degrees granted, and the structure of student internships; for this report, these questions were answered in 2020.

Data Quality Control

To ensure the best quality of data, raw survey data were examined for the following:

- Incomplete data (e.g. a missing section).
- Obvious data entry errors that are outside of the range of normal values.
- Comparison with the previous reports to see if the values show a reasonable change.

An effort was made to rectify data discrepancies by verifying with the original source. When resolving discrepancies proved impossible, we marked the missing or inaccurate data as invalid. As a result, the study reported a reduced sample size for certain segments. When reviewing historical reports, Kantrovich (2010) observed that missing data would often be supplemented with prior data, stating, “In the past, data from previous Supply and Demand studies would be used to replace missing data” (Kantrovich, 2010). Camp also notes using past data to fill in current data.

This report exclusively includes valid data as reported, unless noted. Due to this ongoing and evolving quality assurance process, data in this report may not agree with past reports.

Missing Data

From 2014 to the present, over 40% of states in the demand frame had at least one year of missing data. In select cases, we interpolated missing data to improve comparisons of raw numbers. This approach aligns with prior studies (Camp et al., 2002) and is a common practice in educational research (Noor et al., 2013; Gaur & Dulawat, 2011). The National Center for Education Statistics also employs imputation methods (National Center for Education Statistics, 2024b).

We tested multiple interpolation methods—linear, weighted linear, and weighted average—and selected linear interpolation due to its lowest Normalized Root Mean Square Error (NRMSE). Interpolated data is used only for non-reporting states in the demand frame and for years when an institution was in the supply frame but did not report. All reported data is original unless otherwise noted, and interpolation is limited to data from 2014 onward.

Handling of Potential Survey Error

Surveys typically encounter four types of error: sampling, measurement, coverage, and nonresponse (Dillman et al., 2014). To minimize these, the project team implemented the following strategies:

- **Sampling and Coverage Error:** Since this study aimed for a full census, these errors were not applicable.

- **Measurement Error:** A panel of experts—including teacher educators, National FFA State Relations Team regional specialists, and the NAAE Teach Ag coordinator—reviewed the study for face, content, and construct validity.
- **Nonresponse Error:** The team used a trusted-source approach and multiple communication methods to maximize response rates, leveraging familiarity with the population and a manageable frame size.

Table 1 lists nonrespondents for teacher supply. Commonly institutions do not respond if they have produced no program completers. Table 2 for teacher demand, and Appendix J provides response rates.

Table 1

Supply of School-based Agricultural Education Teachers Nonrespondents

2020 Nonrespondents	2021 Nonrespondents	2022 Nonrespondents
Angelo State University	Angelo State University	Appalachian State University
California State Polytechnic University; Pomona	Arkansas State University	Brevard College
Delaware Valley University	California State Polytechnic University; Pomona	California State Polytechnic University; Pomona
Louisiana Tech	California State University; Fresno	Fort Hays State University
McNeese State University	Eastern New Mexico University	Fort Valley State University
Oklahoma Panhandle State University	Fort Valley State University	Louisiana Tech
Southeast Missouri State University	Illinois State University	McNeese State University
Tennessee Tech University	Louisiana Tech	Sam Houston State University
Texas A&M University-Commerce	McNeese State University	Southeast Missouri State University
University of Massachusetts	Missouri State University	Sul Ross State University
University of New Hampshire	Murray State University	Tennessee State University
University of PR at Mayaguez	Oklahoma Panhandle State University	University of Central Missouri
University of Wisconsin-Platteville	Southeast Missouri State University	University of Maryland Eastern Shore
University of Wyoming	Sul Ross State University	University of Nevada - Reno
Virginia State University	Tennessee Tech University	University of PR at Mayaguez
Washington State University	University of Arkansas Pine Bluff	University of Wisconsin-Platteville
	University of Central Missouri	Wilmington College
	University of Delaware	
	University of Idaho	
	University of Massachusetts	
	University of Minnesota Crookston	
	University of Nevada - Reno	
	University of New Hampshire	
	University of PR at Mayaguez	
	University of Wyoming	
	Virginia State University	
	Wilmington College	

Table 2

Demand of School-based Agricultural Education Teachers Nonrespondents

2020 Nonrespondents	2021 Nonrespondents	2022 Nonrespondents
Arkansas	Alabama	Hawaii
Louisiana	Alaska	Maine
Puerto Rico	Hawaii	Puerto Rico
Vermont	Idaho	Rhode Island
West Virginia	Maine	South Dakota
	Massachusetts	Vermont
	New Hampshire	
	Puerto Rico	
	Rhode Island	
	Vermont	
	West Virginia	

Data Analysis

Data were analyzed primarily using excel database features for simple descriptive statistics. Specifically, data analyzed for each objective is described below.

Objective one: Describe historical trends of agricultural education in the United States. A longitudinal analysis of historical data was conducted, with frequencies and percentages used to describe historical trends. This included secondary data analysis and utilization of historical research methods.

Objective two: Describe agricultural teacher preparation programs in the United States. We used descriptive statistics, including frequencies and percentages, to describe agricultural teacher preparation programs, considering factors such as full-time equivalent faculty/instructors and college affiliation.

Objective three: Describe characteristics of license-eligible program completers. License-eligible program completers are those students who complete an agriculture teacher preparation program and are eligible for licensure upon completion. Descriptive statistics were used to analyze the characteristics of license-eligible program completers. Specifically, frequencies and percentages were used to describe ethnicity and gender.

Objective four: Describe the scope of school-based agriculture programs in the United States. We described the scope of school-based agriculture programs using descriptive statistics, including frequencies and percentages. The project team was interested in looking closer at demand versus supply, therefore, a "Demand Metric" was developed which allowed for a Total Demand Score to be calculated and when compared to candidate production, resulted in shortfall scores. A state had to report both supply and demand numbers in a year to calculate a shortfall.

Presentation of the Data

Decisions regarding the presentation of data were made with consideration of preserving the integrity for longitudinal analysis and building from previous reports. The report commonly will report data by the AAAE regions. States and territories are listed below by region in Table 3 and in Table 4 to better understand regional demographics.

Table 3

States and Territories by Region

Region	States/Territories
North Central	Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, West Virginia, and Wisconsin.
Southern	Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virgin Islands, Virginia.
Western	Alaska, Arizona, California, Colorado, Guam, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming

Table 4

Regional Demographics

Region	**% of US Area**	**% of US Population**	**% of Gross Farm Receipts**	**Institutions***
North Central	27%	40%	52%	40
Southern	23%	37%	26%	47
Western	49%	23%	22%	17

Note: Population US Census estimate 2022, Gross Receipts (USDA) 2023. *Average of the study frame.

This report utilizes several types of analysis:

- Raw Numbers: Data is reported as received. When totaled and compared, variations may occur due to differences in the number of reports submitted.
- Normalized Data: When possible, data (e.g., gender) is expressed as a percentage to reduce variability seen in raw numbers.
- Missing Data: Some reports are incomplete. In certain analyses, only complete reports are used.

Supply and Demand Study Operational Terms and Metrics

The supply and demand instruments collect annual variables to calculate report metrics. Table 5 defines key study terms.

Table 5

Operational Definitions of Study Terms

Term	Description
	U.S. SBAE Demand Survey
Total Teachers	Total teachers employed.
Teachers Leaving	Teachers who are not returning to teaching SBAE in the state.
Teachers Moving	Teachers who have moved from one school to another. These usually have a net zero impact on the demand as they take an open position and leave an open position.
Positions Lost	Positions lost from position reduction or program closure.
New Positions	Additional positions created at existing programs or by new programs.
Vacant Positions	Unfilled positions. This is an indicator of unmet demand.
New Hires	Positions filled by teachers who were not employed in SBAE in the previous year.
	U.S. SBAE Supply Survey
Program Completer (PC)	Reported by institutions program completers are students that have completed all the requirements for licensure through an accredited SBAE teacher preparation program.
PCs Taking Jobs Teaching SBAE	The number of program completers taking jobs in state or out of state.

Study Metrics

Using the data defined in Table 5, the research team developed and calculated metrics to aid analysis and interpretation. This section details the study metrics, definitions, and formulas.

Demand Metric	The demand survey reports three key pieces of data at the state level: the number of teachers not returning to teaching SBAE for any reason, the number of new positions created in the state, and number of positions lost. The demand metric calculates the demand for teachers using the following formula:

Demand Metric = (Teachers Leaving + New Positions) - Positions Lost

Replacements Needed	Replacements needed refers to the total number of teachers required to fill the gaps created by teachers leaving, new positions added, addressing remaining vacancies and accounting for positions lost. The Kantrovich 2010 instrument used to collect data directed respondents to include teachers moving with teachers leaving. “Number (FTE) of secondary agriculture teachers leaving their teaching positions (departures) during or at the end of the 2008-09 school year, including those leaving to move to another school system”

Replacements Needed =Teachers Leaving Positions + New Positions + Vacancies Remaining – Positions Lost

Net Demand for Replacements	Then to create a “Net Demand for replacements” the teachers moving to another school were subtracted. We have provided these metrics to link the current study to past studies. In the current study the “demand metric” is similar but does not include vacancies as these could represent unfilled vacancies from the prior year (a carryover) or unfilled positions created by teachers leaving.

Net Replacement Rate	The net replacement rate is a metric that measures the proportion of the total demand for teacher replacements relative to the number of teachers from the previous year. The Replacement Rate describes the turnover in the teacher population. Since the response rate can vary by year, we calculate this only for states reporting in the prior year. It is calculated using the formula (Kantrovich, 2010):

Net Replacement Rate = Net Demand for Replacements / teachers in the previous year

Yield	Yield is the ratio of program completers to those who actually take teaching jobs in that year. This data is reported by individual institutions and has been used in all supply and demand reports since 1965. The formula is:

Yield = PCs taking jobs teaching SBAE / Program Completers

Program Completer Ratio	The ratio is an indicator of the number of new teachers that are prepared by traditional teacher preparation programs. This metric is useful in understanding the role traditional programs have in supplying teachers. The formula is:

Program Completer Ratio = Program Completer new hires / Total new hires

Objective 1: Describe Historical Trends of Agricultural Education in the United States.

Findings

The critical role of well-prepared teachers and the impact of teacher training on the success of school-based agricultural education is underscored by the Smith-Hughes Vocational Education Act of 1917. This landmark legislation required states to allocate a specific level of funding for teacher training as a condition for receiving additional benefits under the act (Swanson, 1942). Agricultural teacher education programs date back as early as 1907 (Bailey, 1908), with records documenting the number of newly qualified candidates by 1920 (Federal Board for Vocational Education, 1921; Jarvis, 1921).

Teacher Preparation Programs

Table 6 highlights reporting teacher preparation institutions from 1907 to 2022. These numbers are extracted from historical reports (Jarvis, 1921; Swanson, 1942; etc.), past supply studies (Camp, 1998; Camp, 2000; Camp et al., 2002; Kantrovich, 2007; Kantrovich, 2010) and data collected from 2014- 2022. For the current study, the number reported is based on the established survey frame, not on responses. Notable growth in agricultural education teacher preparation programs has been at non-land-grant universities.

Since 1965, the American Association for Agricultural Education (AAAE) has consistently reported on the supply and demand of school-based agricultural education (SBAE) teachers. Eck and Edwards (2019) identified 31 reports published between 1965 and 2010. However, Kantrovich (2010) referred to the 2006–2009 study as the 36th report. These reports varied in frequency, with some published annually and others covering three-year periods. The current project (2014–2022) has produced annual executive summaries and three three-year reports (see Appendix B).

A key factor influencing the ability to produce program completers who meet workforce demand is faculty capacity. The total full-time equivalent faculty (FTEF) dedicated to agricultural teacher preparation includes tenure-track faculty (ranked), non-tenure-track faculty (clinical/lecturer), graduate teaching assistants, and others (e.g., adjunct faculty, non-benefited instructors). While the profession has generally seen a decline in total FTEF dedicated to agricultural teacher preparation, a notable increase was reported in 2020 (Figure 2).

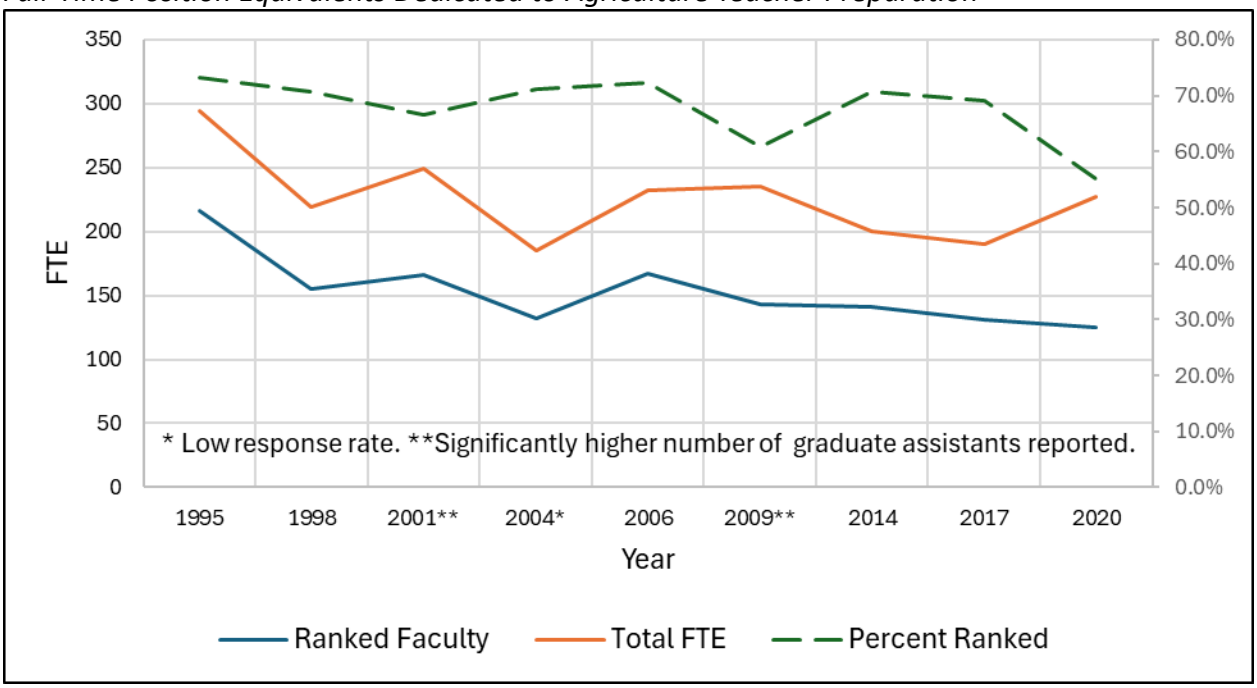
Table 6

Historical perspective of reported U.S. agriculture teacher preparation programs

Year	Number of U.S. Institutions	Year	Number of U.S. Institutions
1907	1	1941	72
1908	1	1989	88
1909	3	1995	84
1910	6	1998	78
1911	7	2001	79
1912	9	2006	92
1913	13	2009	92
1914	17	2014	103
1915	18	2015	99
1916	19	2016	101
1917	30	2017	101
1918	47	2018	101
1919	60	2019	107
1920	64	2020	107
1921	69	2021	107
1922	69	2022	105
1923	78		
1924	68		
1925	70		

Figure 2

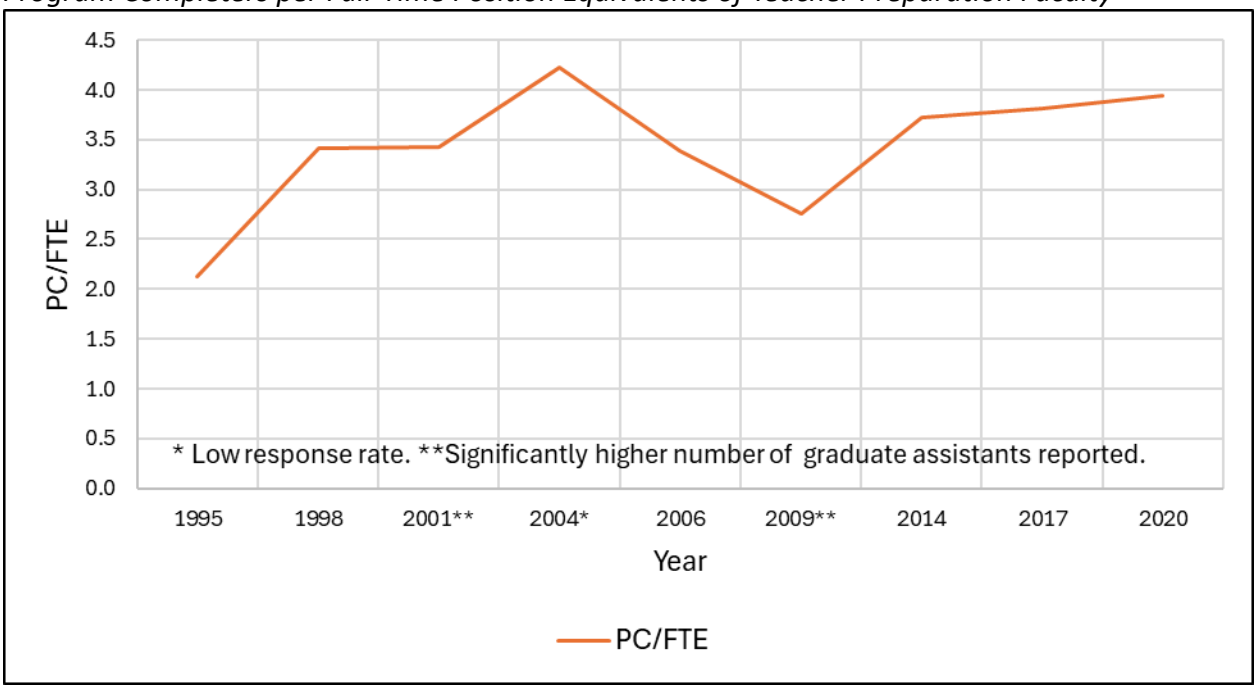
Full-Time Position Equivalents Dedicated to Agriculture Teacher Preparation



The ratio of program completers to full-time equivalent faculty (PC/FTE) has shown an overall upward trend. After a dip in 2009, the ratio increased to 3.7 in 2014, rose slightly to 3.8 in 2017, and reached 3.9 by 2020, indicating increased program completer output relative to faculty capacity (Figure 3).

Figure 3

Program Completers per Full-Time Position Equivalents of Teacher Preparation Faculty



Agricultural Teacher Preparation Program Completers

In 2020, 89 institutions reported a total of 897 agricultural education teacher licensure (program) completers. This number declined to 789 completers from 81 institutions in 2021 and rebounded to 854 completers from 86 institutions in 2022. These fluctuations reflect year-to-year differences in institutional reporting and should be interpreted accordingly. Figure 4 presents a long-term historical view of license-eligible program completers dating back to 1920, while Figure 5 provides a more detailed look at annual completer trends from 2000 to 2022. Together, these figures illustrate a slight but steady upward trend in program completer production over the past two decades.

Camp (1987) noted the complexity of accurately tracking completer trends due to evolving certification pathways and the increasing number of agricultural education graduates pursuing non-teaching careers. He emphasized that:

> *"This is one of the most difficult areas to address clearly. Certification patterns are changing rapidly in the United States (Frantz, Strickland, & Elson, 1987). Only a few years ago, the question of numbers*

was phrased in terms of the number of graduates of teacher education programs. Today, simply being a graduate of a four-year agricultural teacher education program does not necessarily imply qualification to teach. Additionally, only a few years ago, there was little distinction between the number of teacher education graduates and the number of agricultural education graduates. Today, increasing numbers of agricultural education graduates major in extension education, communications, international agricultural education, and various other specialty areas. Most of these graduates are not qualified to teach and are generally not pursuing teaching careers. Thus, they should not be included in calculations regarding teacher placement rates."

Following a sharp decline between 1978 and 1990, the number of program completers has generally trended upward.

Figure 4

Historical Perspectives of Agriculture Teacher Preparation Program Completers, 1920- Present

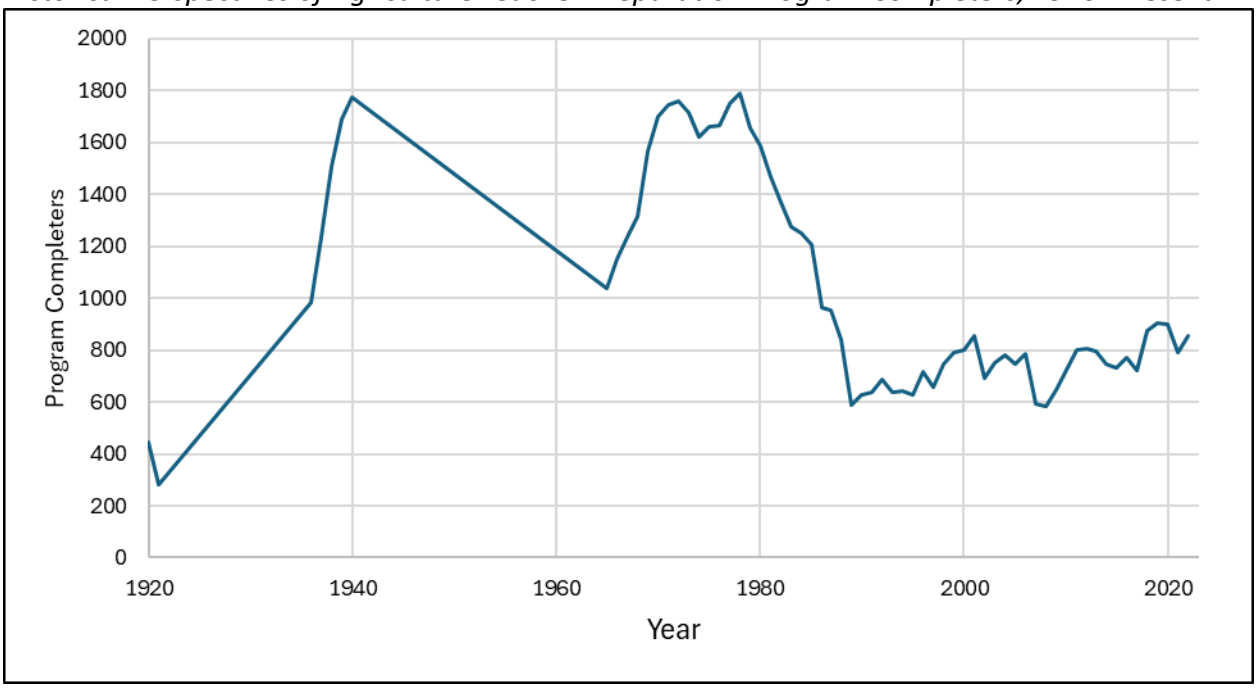
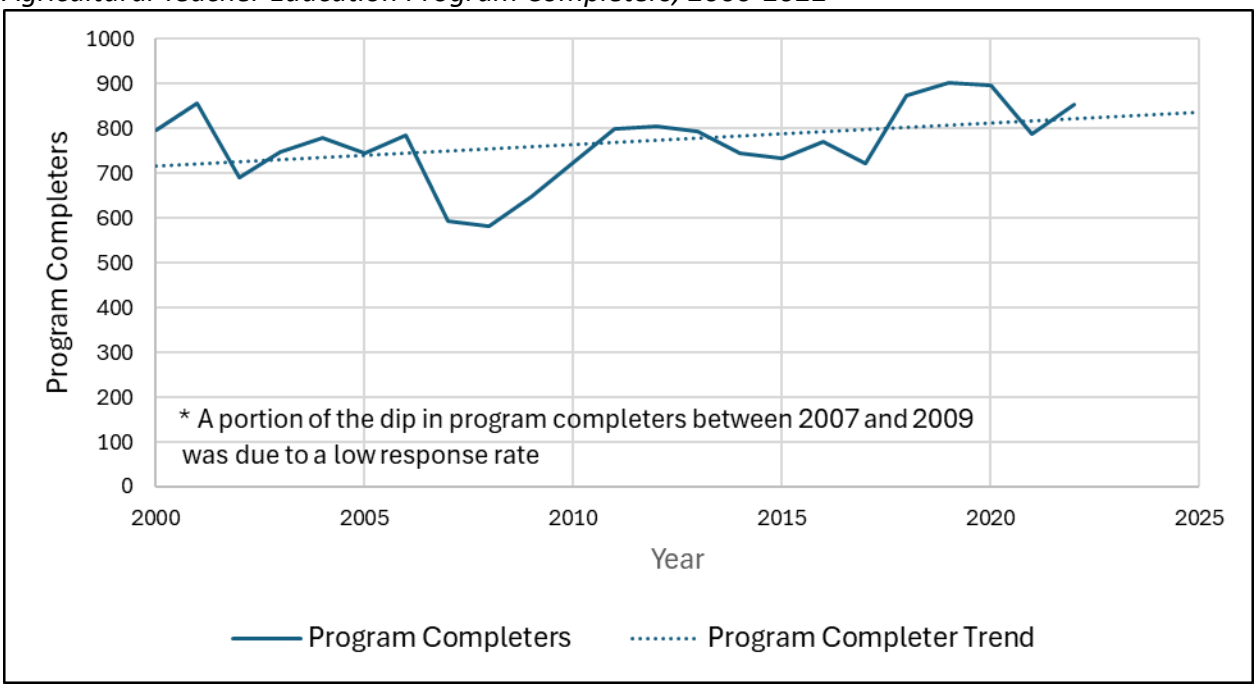


Figure 5

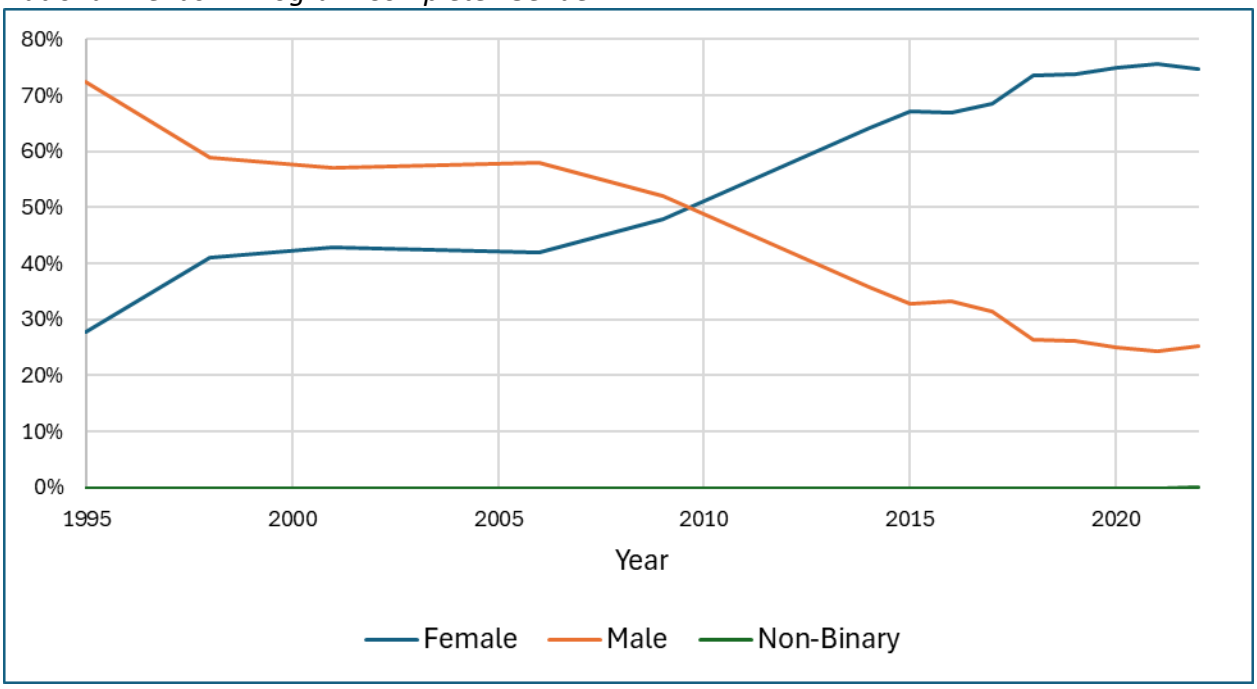
Agricultural Teacher Education Program Completers, 2000-2022



Over time, there has been a significant shift in the gender composition of school-based agricultural education (SBAE) teachers, driven by an even more pronounced change in the gender distribution of program completers. Nationally, gender parity among program completers was achieved around 2010 (Figure 6). Over the past 30 years, the male-to-female ratio has reversed. However, in recent years, this trend has begun to stabilize.

Figure 6

National Trends in Program Completer Gender



Note: The non-binary gender category was added to the survey in 2019, though reported numbers have remained in the single digits.

Figure 7 shows that the racial composition of program completers has remained relatively consistent over the past two decades. Although there has been a slight increase in non-white program completers in recent years – largely driven by the growth in the Hispanic population, particularly in the Western region – the overall trend reflects slow progress in diversifying the agriculture teacher pipeline.

Figure 7

Trends in Program Completer Race

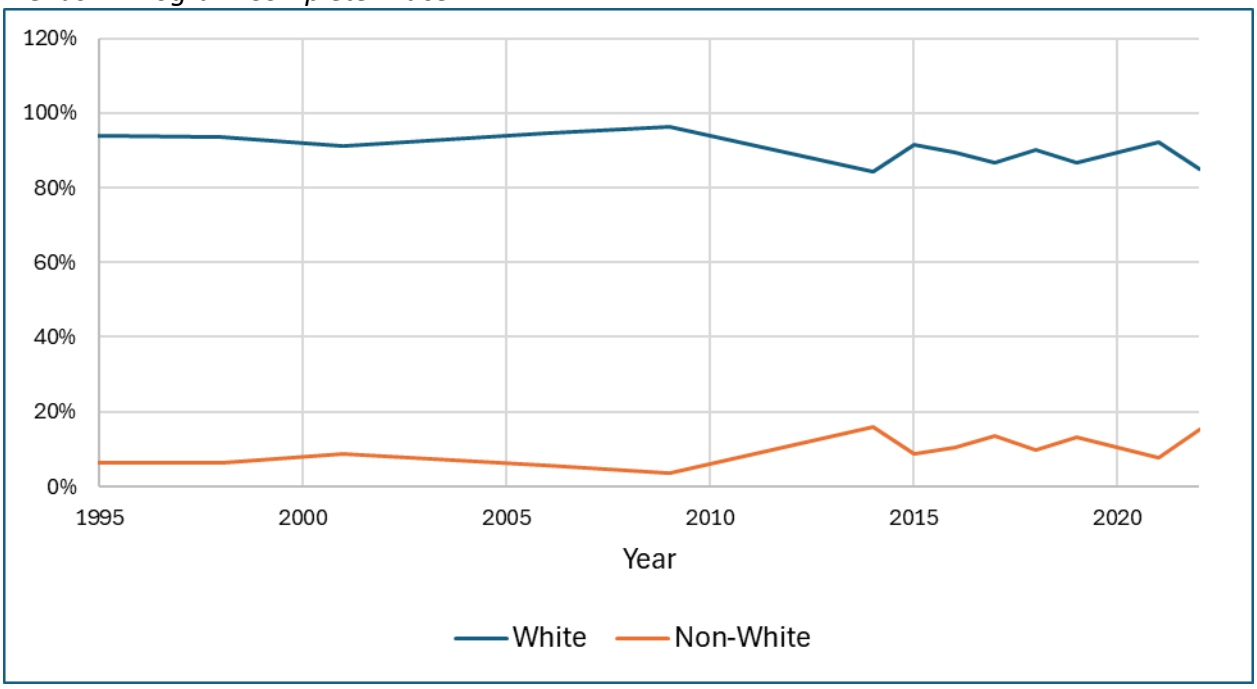


Figure 8 presents a historical overview of the yield rate. Yield, defined as the percentage of program completers who accept positions in school-based agricultural education (SBAE) relative to the total number of completers, continues to be a critical metric in assessing the workforce supply. Figure 8 illustrates this trend, showing a steady increase in yield since a low of 40% in 1985. By 2022, the yield had reached a historic high of 79%. Yield can be influenced by several factors, including the structure of the preparation program. For example, graduate-level programs often have higher yield rates because students are more likely to be committed to teaching careers beyond their undergraduate experience. In contrast, less specialized programs may attract students with broader career interests, resulting in lower yield rates into teaching.

Figure 8

Percentage of License-Eligible Program Completers Who Acquired Teaching Positions in School-Based Agricultural Education

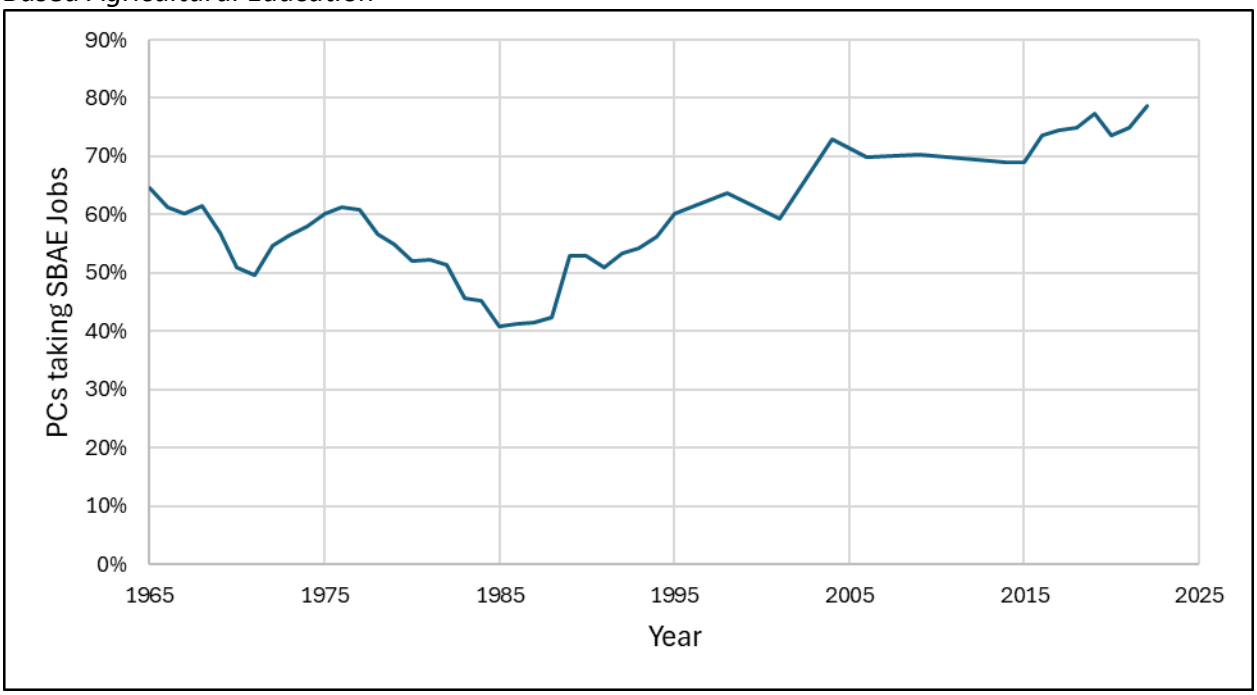
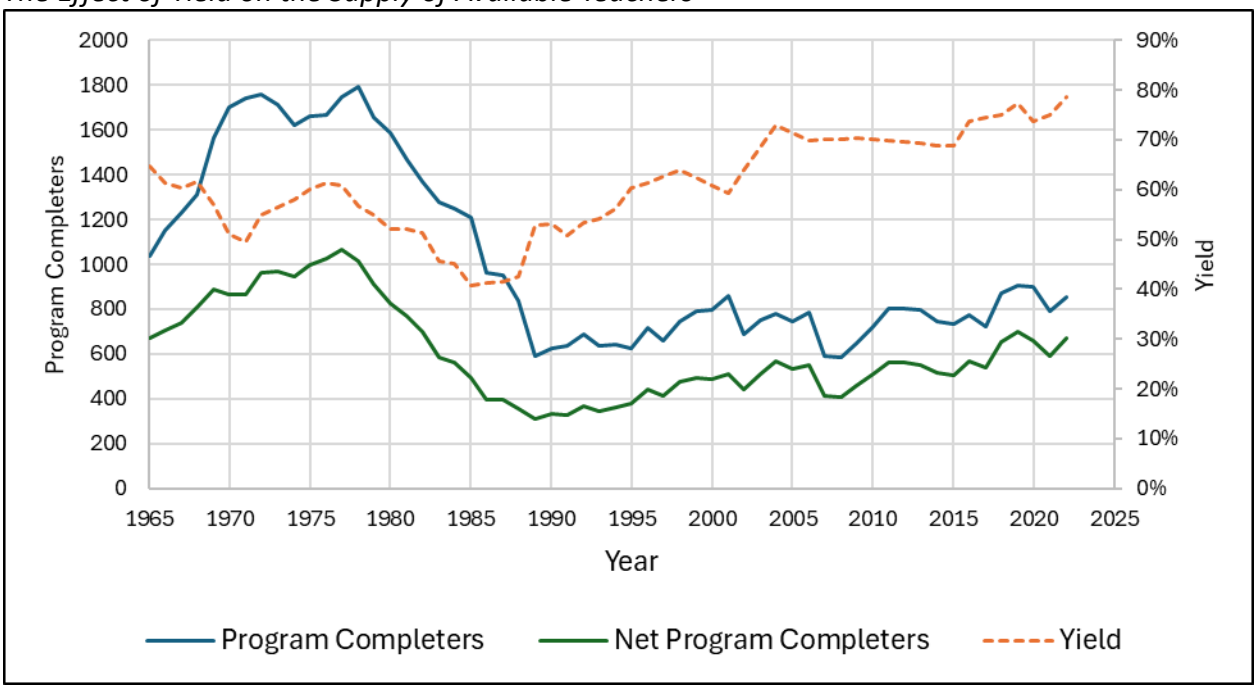


Figure 9 demonstrates the combined effect of increased program completers and higher yield, resulting in a larger pool of traditionally licensed teachers entering SBAE classrooms. Figure 9 further illustrates this trend. This trend has positively impacted the supply of available teachers, even as overall demand continues to grow.

Figure 9

The Effect of Yield on the Supply of Available Teachers



Notes: Net Program Completers = Program Completers taking jobs in SBAE

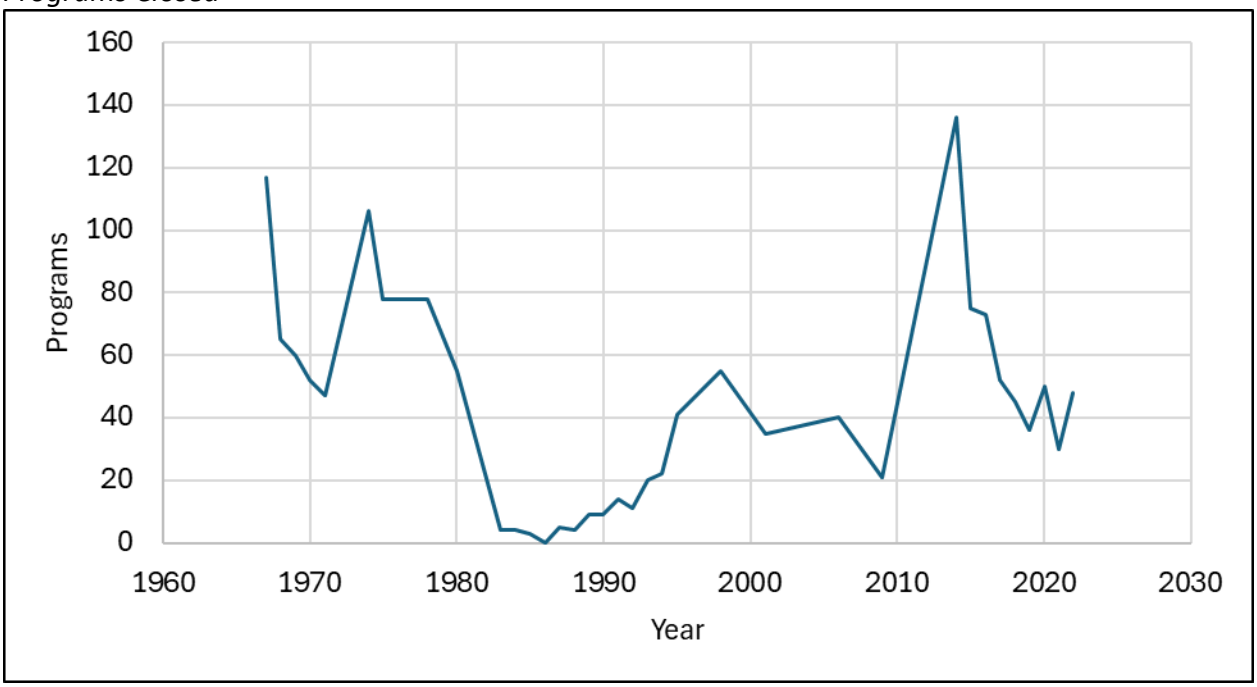
Programs and Teachers

Early supply and demand studies tracked and reported the number of *departments that would not operate due to a teacher shortage.* In contrast, the current study collects data on program closures for any reason. Figure 10 presents these data for all available years.

It is important to note that not all states report program closure data, meaning the numbers reported are influenced by response rates. For the current study (2014–present), program closure data is expressed as a ratio of programs lost to the total number of programs in the reporting states.

Figure 10

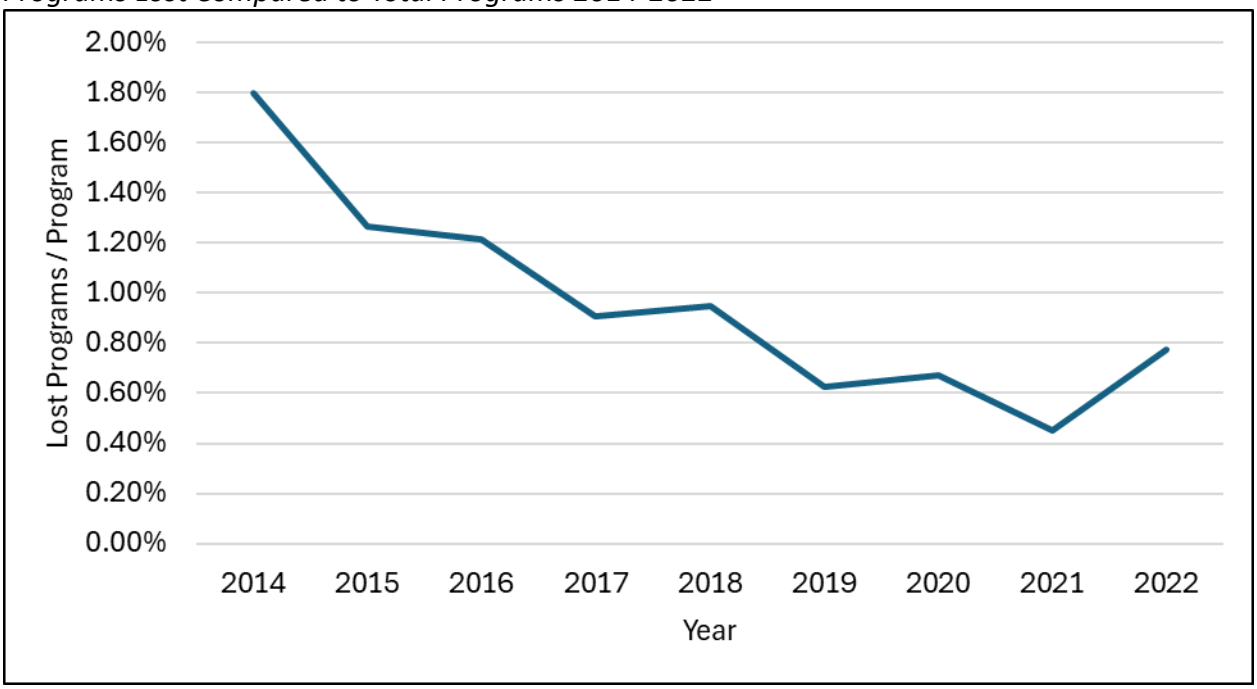
Programs Closed



To provide a more standardized view of program losses, we calculate the ratio of programs lost to the total number of programs in reporting states (Figure 11). This approach helps mitigate the impact of non-response and ensures a more accurate representation of trends.

Figure 11

Programs Lost Compared to Total Programs 2014-2022

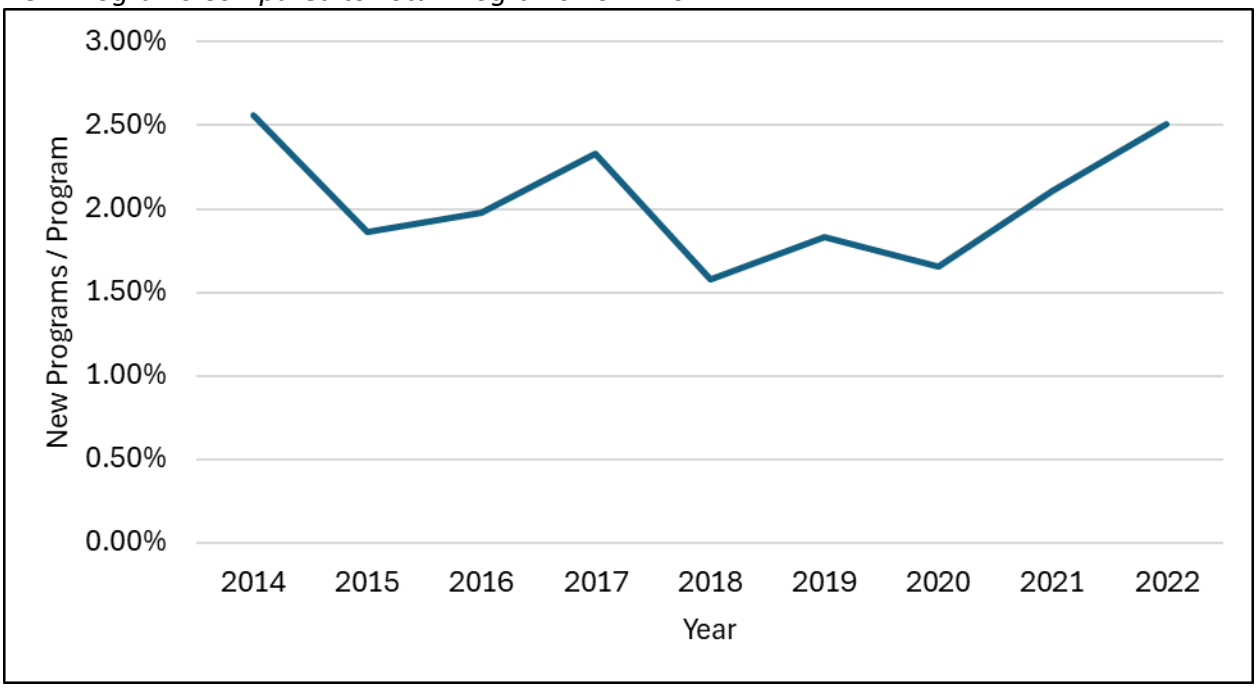


Note: Only data for states reporting programs lost was used to calculate the ratio.

Similar to program losses, we analyze the ratio of newly reported programs to the total number of programs in reporting states (Figure 12). Although there is a slight downward trend, the overall growth of new programs continues to outpace program closures.

Figure 12

New Programs Compared to Total Programs 2014-2022

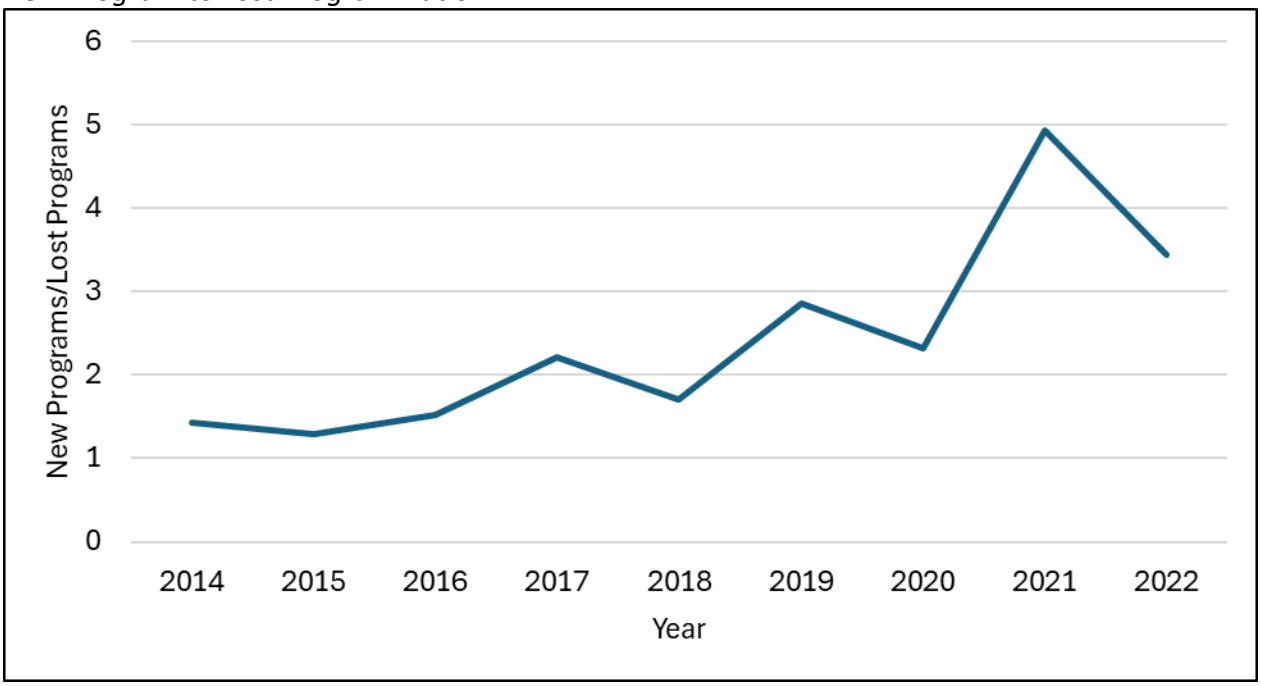


Note: Only data for states reporting new programs was used to calculate the ratio.

When comparing the number of new programs to lost programs, the increasing ratio suggests that, on a national level, programs are being added at a faster rate than they are being discontinued (Figure 13).

Figure 13

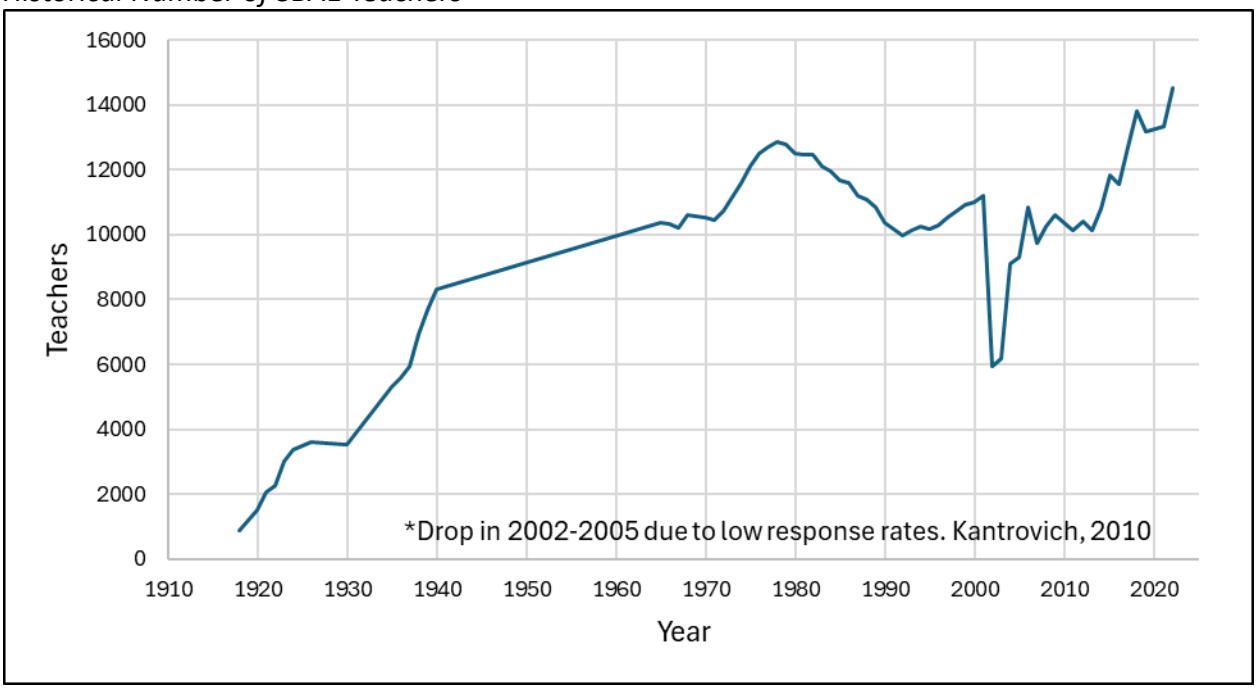
New Program to Lost Program Ratio



Since the inception of the AAAE supply and demand studies in 1965, data on the total number of school-based agricultural education (SBAE) teachers have been consistently collected. For years prior to 1965, data were sourced from other records. These figures are presented in Figure 14, though some variation may occur due to differences in response rates.

Figure 14

Historical Number of SBAE Teachers



The most recent trend observed in this study (2011–2022) reflects a 46% increase in the number of SBAE teachers over 12 years (Figure 15). Based on this trajectory, projections suggest continued growth in the number of SBAE teachers through at least 2025.

Figure 15

Recent Trend in Number of SBAE Teachers

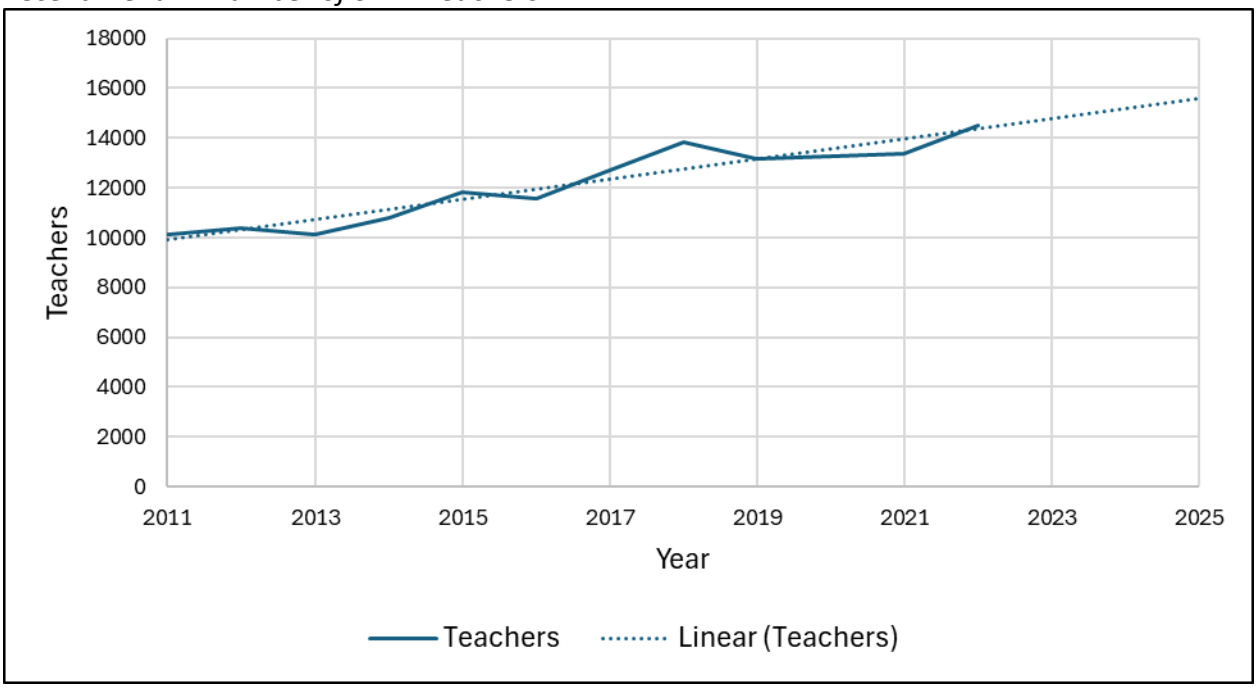


Table 7 provides a historical overview of agricultural education teaching positions and associated workforce movement from 1985 – 2022. This table follows the same format as previous studies conducted by Camp and Kantrovich, with notable adjustment in how “teachers leaving” is defined. In their data collection, *Teachers Leaving* included those who transferred from one school to another. However, in the current study, *Teachers Leaving* refers only to those exiting the profession entirely, excluding those who move between schools.

This refined definition allows for a more accurate calculation of true workforce attrition and highlights the ongoing demand for replacements due to both program growth and teacher turnover.

Table 7

Historical Overview of Agricultural Education Teaching Positions

Year	1985	1990	2001	2006	2009	2015	2020	2021	2022
Total Positions	11687	10356	11189	10846	10600	11834	13254	13349	14516
Replacements Needed	1043	979	1171	1218	870	1710	1257	1458	1990
Moving Between Schools	238	351	372	394	203	555	366	353	613
Net Demand for Replacements Needed	805	628	575	824	667	1155	891	1105	1377
Needed but Not Available	8	23	67	78	30	80	53	85	148

Woodin R.J. (1967) noted that the number of teachers with emergency or temporary (non-traditional) certification can serve as an indicator of the shortage of teachers. Table 8 compares the number of new hires without traditional certification, highlighting the proportion of the overall teacher workforce that entered the profession through emergency or alternative pathways. It is important to note that non-licensed individuals were excluded from the analysis.

Table 8

Historical New Hires Without Traditional Certification

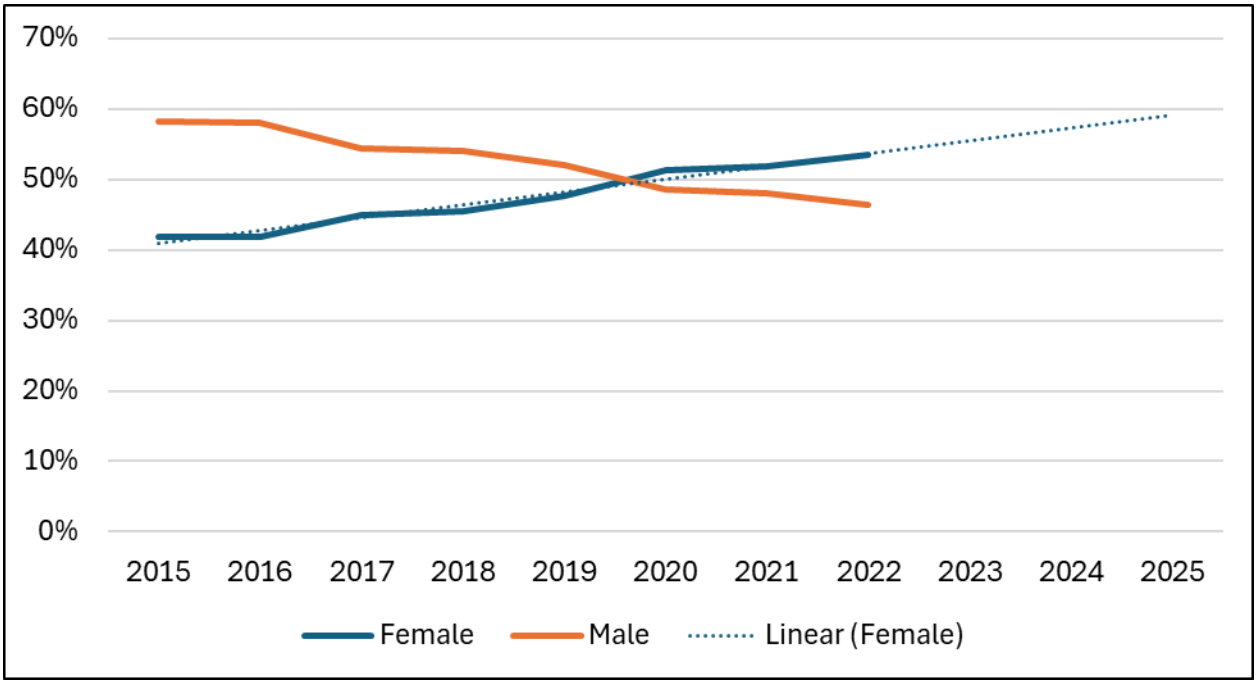
Year	Teachers	Temp/Emergency Certification*	% of Teachers
1967	10221	242	2.4%
1975	12107	607	5.0%
1980	12510	454	3.6%
1985	11687	140	1.2%
1990	10356	110	1.1%
1995	10164	119	1.2%
2001	11189	242	2.2%
2006	10847	185	1.7%
2010	10600	390	3.7%
2015	11220	278	2.5%
2020	10192	312	3.1%

Note: * Historically, this designation was made for all non-traditional certifications. In the current study this number includes alternative certifications, unlicensed, other, and unknown sources of hires.

Figure 16 highlights a significant shift in gender composition of the SBAE teaching workforce. Gender parity was reached between 2019 and 2020, marking a pivotal moment in the profession's makeup. This trend reflects broader changes observed in the gender distribution of program completers (Figure 6) and is expected to continue. A linear projection indicates that by 2025, female teachers will likely comprise approximately 60% of the SBAE workforce, signaling a lasting transformation in the field.

Figure 16

Historical Trends in Teacher Gender



Note: Data first collected in 2015. Non-Binary, Other, and Unknown are < 1% of the total teachers.

Kantrovich (2007) calculated a *replacement rate* by comparing the sum of *Teachers Leaving Positions, New Positions, and Vacancies Remaining*, minus *Positions Lost and Teachers Moving Between Schools*, to the total number of teachers in the previous year. In studies conducted before 2014, *Teachers Leaving* included those transferring between schools. However, in the current study, we use the total number of teachers in the current year, as variations in sample size between years could significantly impact the results (Figure 17).

If a state did not report a specific component, such as *Positions Lost*, it was assumed to be zero. Additionally, only states reporting valid data were included in the analysis, meaning the total number of teachers examined may be lower than the overall number of SBAE teachers reported. If the replacement rate continues to rise and the total number of teachers increases by approximately 2% per year, these factors suggest a significant increase in demand for SBAE teachers. However, despite an overall decreasing trend in the replacement rate, year-to-year fluctuations remain volatile.

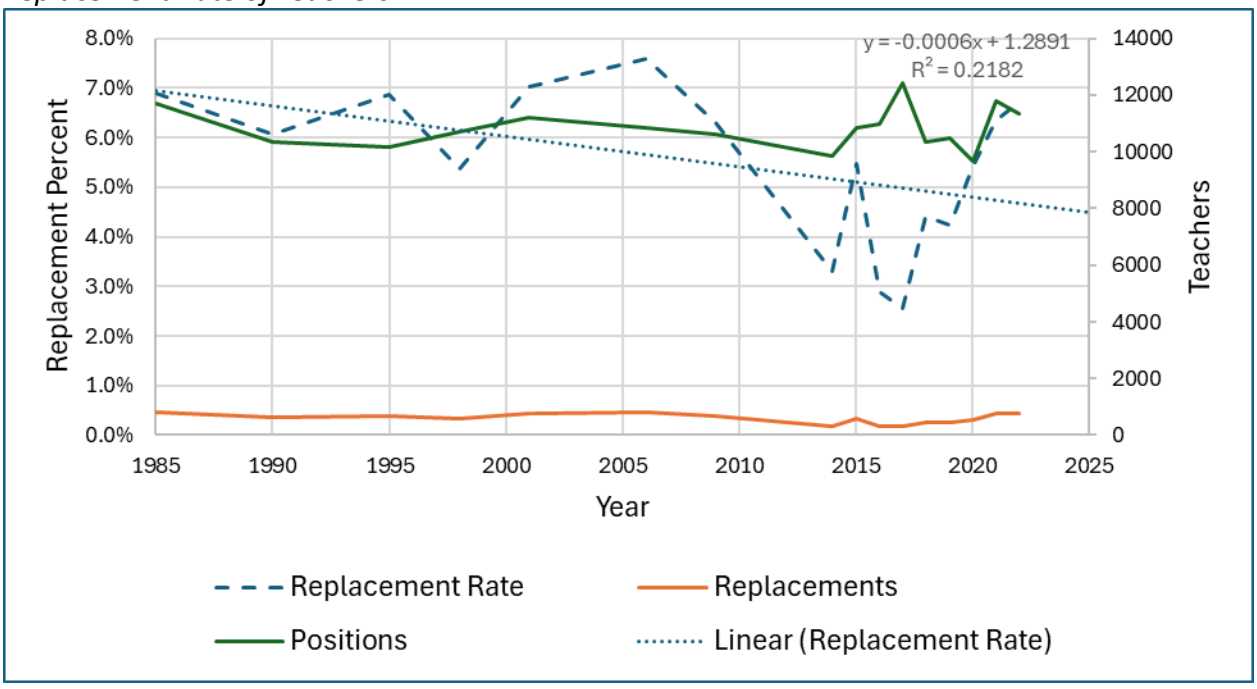
Historically, fewer than two-thirds of newly certified agricultural education graduates enter the SBAE teaching profession (Eck et al., 2021). Research on retention and teaching quality between *alternatively certified (AC)* and *traditionally certified (TC)* teachers has yielded mixed results. One study found that TC teachers had significantly higher retention rates than AC teachers (Robinson & Edwards, 2012), while another reported three-year retention rates for AC teachers ranging from 74% to 92% (Haj-Broussard et al., 2016).

Concerns have been raised regarding the academic qualifications and career commitment of AC teachers compared to their TC counterparts (Shen, 1997). However, AC programs have played a critical role in addressing teacher shortages, particularly in high-need subjects and urban areas, while also contributing to a more diverse teaching workforce (Shen, 1997).

Regarding teaching quality, a recent large-scale study found no significant differences between AC and TC teachers. However, novice teachers from both certification pathways scored lower on classroom management than their more experienced peers (Lucksnat et al., 2024). These findings suggest that beginning teachers—regardless of certification route—may benefit from additional preparation in classroom management before entering the profession.

Figure 17

Replacement Rate of Teachers



Conclusions, Discussion, and Implications

Teacher Preparation Programs

The number of teacher preparation programs is growing, which will increase the supply of program completers. Data from 2024, provided by the Food and Agricultural Education Information System (FAEIS) reports 159 institutions with colleges of agriculture, suggesting that significant potential exists to expand the number of teacher preparation programs.

Full Time Equivalent Faculty (FTEF)

Zhang et al. (2015) observed that financial constraints have led colleges and universities to rely increasingly on lower-cost, non-tenure-track faculty. Similarly, Jaquette and Curs (2022) noted that declining funding has reduced institutions' ability to hire tenure-line faculty.

In agricultural teacher preparation, total full-time equivalent faculty (FTEF) includes tenure-track (ranked) faculty, non-tenure-track faculty (clinical/lecturers), graduate teaching assistants, and adjunct or non-benefited teaching staff. While the profession has seen an overall decline in FTEF dedicated to agricultural teacher preparation, a notable increase occurred in 2020 (Figure 2). The program completer-to-faculty ratio rose from 3.7 in 2014 to 3.8 in 2017, continuing upward in 2020. Given the increasing number of program completers (Figure 4), this ratio will likely continue to rise unless FTEF increases. To maintain the 2017 ratio in 2020, an additional 46 FTEF would have been required nationwide.

For over a century, teacher preparation has been a cornerstone of university-based agricultural education, ensuring a steady supply of SBAE teachers. Agricultural teacher preparation is unique in that it extends beyond classroom instruction to include Supervised Agricultural Experience (SAE) and FFA program management, elements often absent from alternative certification pathways, which typically focus solely on subject matter. Research has consistently emphasized the importance of high-quality teacher preparation in producing effective educators (Darling-Hammond & Baratz-Snowden, 2007). However, this preparation depends on having sufficient faculty to meet training demands.

Despite the increasing demand for SBAE teachers, full-time and tenure-track faculty positions in agricultural teacher education have steadily declined. Over the past two decades, higher education institutions have increasingly relied on part-time and non-tenure-track faculty (Anderson, 2002; Baldwin & Chronister, 2001; Conley et al., 2002; Ehrenberg, 2004; Ehrenberg & Zhang, 2004). This shift is often driven by budget constraints, declining state support, retirements, and enrollment changes (Green, 2007).

Between 1998 and 2022, the proportion of tenure-track faculty in agricultural teacher education declined from 74% to 69% (Camp, 1998). In 2014, 38% of reporting institutions had one or fewer FTEF, and 67% had two or fewer. In 2017, these figures improved slightly, with 30% of institutions reporting one or fewer FTEF and 66% reporting two or fewer faculty. In 2020, 32% of institutions reported one or fewer faculty, and 51% reported two or fewer faculty.

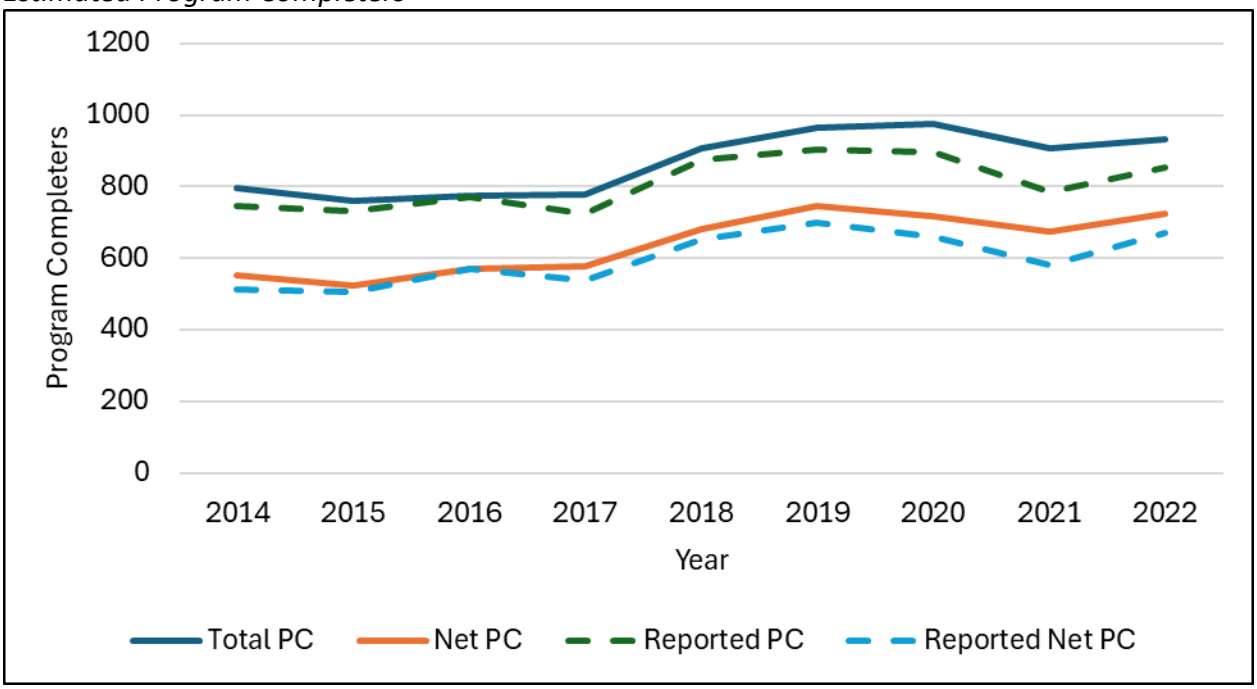
Of the 75 institutions that reported in both 2014 and 2020, 65% (49 institutions) reported an increase in the program completer/FTEF ratio. From 1995 to 2017, the number of program completers increased by 16%, while FTEF decreased by 37%, contributing to a worsening completer-to-faculty ratio. This trend raises concerns about the future of agricultural teacher preparation, highlighting the need for increased support to maintain teacher quality. Reducing the completer-to-faculty ratio is a crucial step in strengthening teacher preparation programs. Ensuring that educators are well-trained remains a top priority for both policymakers and the public, as effective teachers are essential to student success (American Psychological Association, 2014).

Agricultural Teacher Preparation Program Completers

Based on interpolated data (Figure 18), we estimate that the net number of program completers was underreported by an average of 10% between 2020 and 2022.

Figure 18

Estimated Program Completers

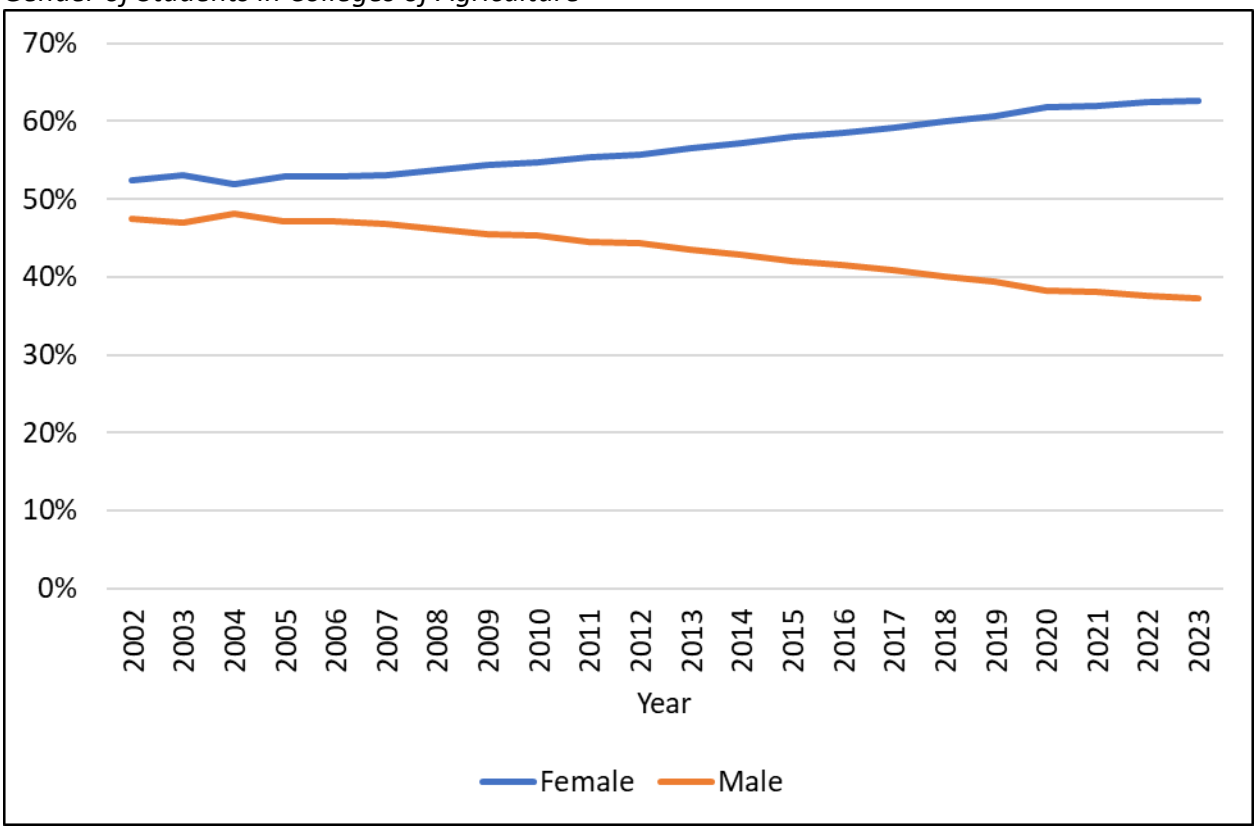


Ideally, the demographics and cultural backgrounds of teachers should reflect those of their students. Research supports the benefits of teacher diversity—Cherng and Halpin (2016) found that students across all backgrounds held more favorable perceptions of minority teachers, underscoring the need for a more diverse teacher pipeline. Similarly, Egalite et al. (2015) found that race-congruent teachers positively impacted student outcomes, particularly among low-performing students.

Currently, nearly 75% of program completers nationwide are female, a trend that is reshaping the SBAE teacher workforce. This is especially significant given that program completers accounted for 53% of new hires in 2019; this shift is reshaping the SBAE teacher workforce. However, this gender imbalance is noteworthy when compared to the near 50/50 gender split among secondary students. Figure 19 supports this shift, showing a steady increase in female enrollment in colleges of agriculture, where female enrollment increased from 58% in 2002 to 65% in 2022 (FAEIS, 2024). Yet, the percentage of female program completers in agricultural education even exceeds that. This disproportion could have implications for program delivery in a traditionally male-dominated content areas such as agricultural mechanics.

Figure 19

Gender of Students in Colleges of Agriculture



Note: Data includes all institutions reporting Food and Agricultural Education Information System (FAEIS) data within a college of agriculture.

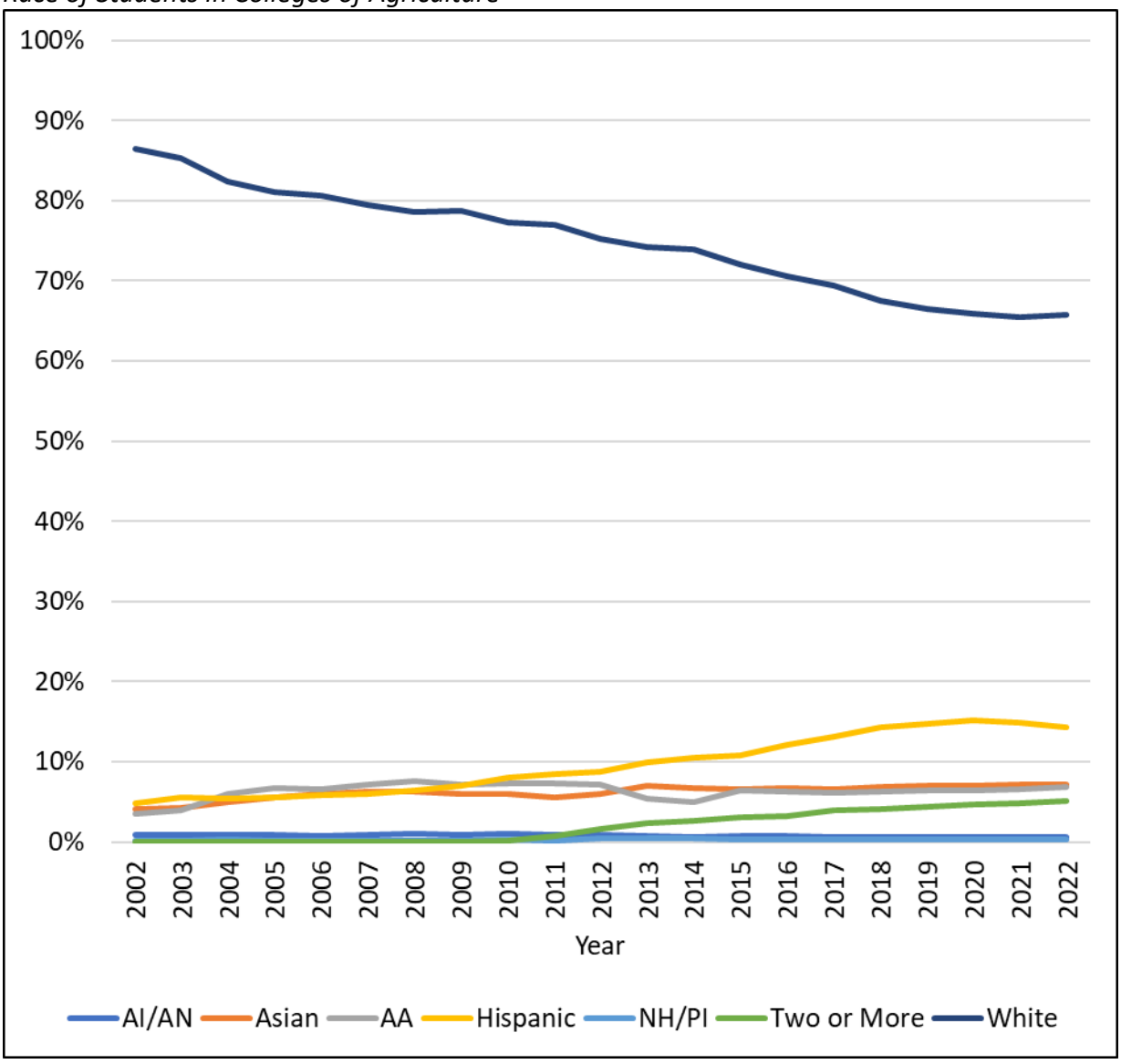
Racial diversity among program completers has not kept pace with broader student trends. As shown in Figure 20, non-white student enrollment in colleges of agriculture rose significantly. Program completer diversity declined from 14% non-white in 2014 to 12% in 2022, despite an increase in racial diversity within agricultural colleges. Between 2002 and 2022, non-white student enrollment in colleges of agriculture rose from 13% to 32% (FAEIS, 2024), with Hispanic students driving most of this growth. However, this increasing diversity has not been

reflected in program completers, indicating a potential gap in recruitment and retention efforts. Geographic variability also plays a role where students in states like New Mexico differ demographically from those in states like Iowa, complicating national comparisons.

To address these disparities, further research is needed. Institutions should examine the effectiveness of their recruitment strategies to ensure that teacher preparation programs attract and support a diverse pool of future educators.

Figure 20

Race of Students in Colleges of Agriculture



Note: Data includes all institutions reporting FAEIS data within a college of agriculture.

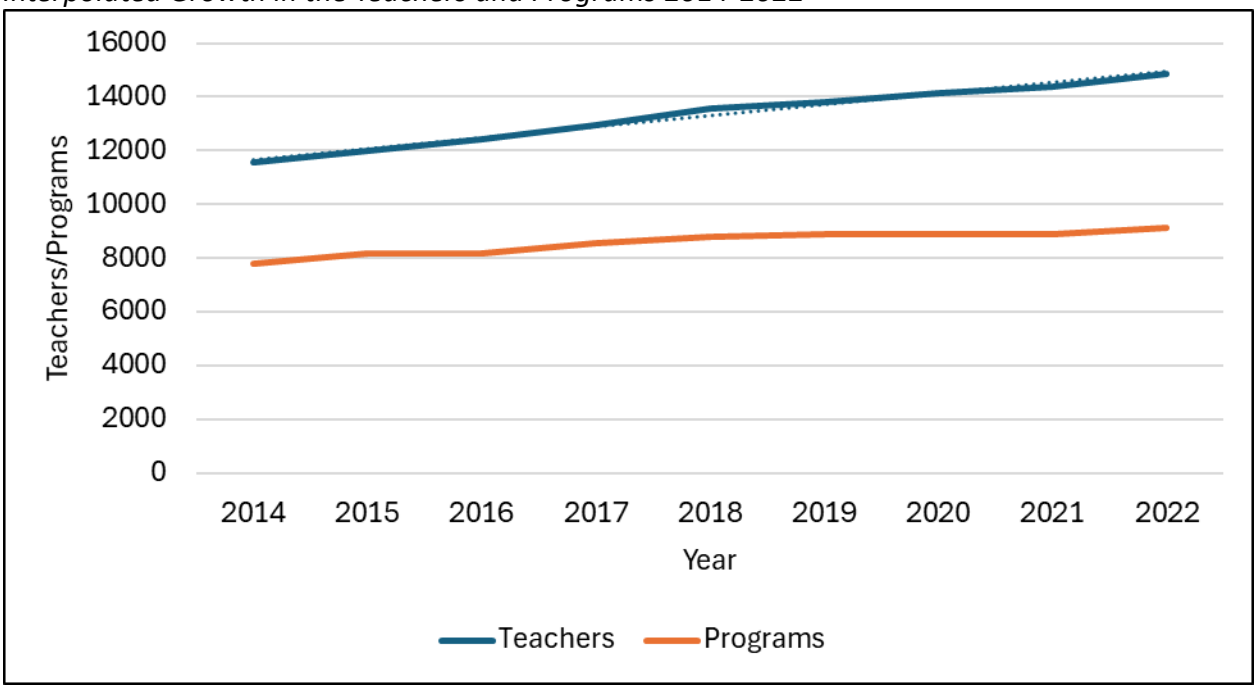
Teachers and Programs

Based on interpolated data, the number of teachers is increasing at an average rate of 3% per year, while the number of programs is growing at 2% per year (Figure 21). This trend suggests a rising demand for new teachers to fill expanding positions.

The widening gap between teacher and program growth indicates a shift toward larger agricultural education departments. Between 2020 and 2022, the average department size reached 1.9 teachers per program, up from 1.6 teachers per program between 2014 and 2016.

Figure 21

Interpolated Growth in the Teachers and Programs 2014-2022



Long-term trends indicate that demand for SBAE teachers will continue to rise. While the growing number of teacher preparation programs has contributed to an increase in net program completers, this growth has not kept pace with the increasing demand for teachers. As a result, teacher shortages may persist despite expansion in preparation programs.

Objective 2: Describe SBAE Teacher Preparation Programs in the United States.

Findings

Institution Distribution

Each year, this study establishes a framework for SBAE teacher preparation institutions, including those at 1862 land grant, 1890 land grant, non-land grant, and private institutions. The frame fluctuates as programs are added or discontinued. Over time, there has been a slight overall increase in the number of institutions (Table 9).

Table 9

Supply Frame by Region and Institution Type

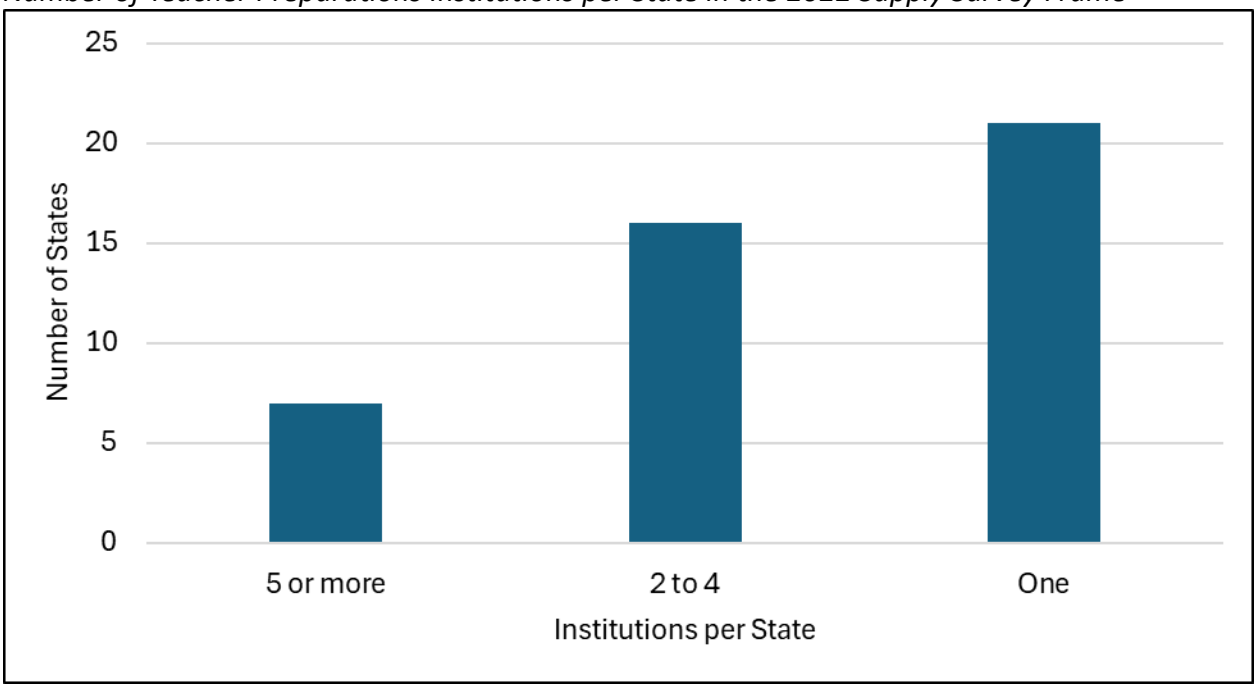
Region/Type	2014	2015	2016	2017	2018	2019	2020	2021	2022
North Central									
1862	20	20	20	20	20	20	19	20	17
1890	2	2	2	2	2	2	2	2	2
NLG	14	14	15	15	17	20	18	19	19
PVT	1	1	1	1	1	1	1	1	1
Total	37	37	38	38	40	43	40	42	39
Southern									
1862	14	14	14	14	14	13	14	14	14
1890	7	6	6	6	6	6	5	6	5
NLG	25	25	26	26	26	29	29	29	30
Total	46	45	46	46	46	48	48	49	49
Western									
1862	12	11	11	11	11	11	11	11	11
NLG	6	5	5	5	5	5	7	5	5
Total	18	16	16	16	16	16	18	16	16
Grand Total	101	98	100	100	102	107	106	107	104

Note: NLG = Non-Land-Grant, PVT=Private University

The 2022 survey identified 104 institutions across 44 states offering SBAE teacher preparation programs (Figure 22). Nearly half of all states (48%) have only one such program, while 36% have two to four institutions. The remaining 16% have more than four programs.

Figure 22

Number of Teacher Preparations Institutions per State in the 2022 Supply Survey Frame



School-based agricultural education (SBAE) teacher preparation programs in the United States are regularly evaluated to determine the supply of teacher candidates. Annual data collection occurs alongside more comprehensive reporting is conducted at the start of each three-year cycle.

Table 10 summarizes faculty teaching responsibilities dedicated to SBAE teacher preparation, including the proportion or percentage of their teaching responsibilities within these programs. The current study provides data segmented by region, including both national totals and regional breakdowns for fall 2014, 2017, and 2020. Earlier data were sourced from previous reports.

Table 10

SBAE Faculty by Region & U.S. Totals

Year	AAAE Region	*n*	Total FTEF	Ranked	Full Prof.	Assoc. Prof.	Asst. Prof.	Clinical	Instructor	Grad or TA	Other
2020	North Central	34	59.0	31.1	6.3	9.9	14.9	8.6	9.6	7.2	2.6
	Southern	40	128.3	71.8	15.0	28.4	28.5	1.7	18.3	32.0	4.5
	Western	14	35.0	22.4	9.9	7.5	5.0	2.0	8.0	2.6	0.0
	Total	93	222.3	125.2	31.2	45.7	48.4	12.3	35.8	41.8	7.1
2017	North Central	34	71.5	45.4	18.1	12.5	14.9	7.6	12.7	2.0	3.9
	Southern	38	86.3	62.2	21.6	20.7	20.0	4.0	8.0	12.1	0.0
	Western	14	31.9	23.7	7.3	10.1	6.4	2.0	4.3	2.0	0.0
	Total	88	189.7	131.2	46.9	43.2	41.2	13.6	25.0	16.1	3.9
2014	North Central	29	48.1	29.9	14.3	7.7	7.9	2.2	10.3	5.5	0.3
	Southern	44	105.6	80.8	26.4	22.0	32.5	1.3	11.0	11.5	1.0
	Western	17	46.5	30.7	13.4	4.8	12.5	1.0	7.3	7.5	0.0
	Total	89	200.1	141.3	54.1	34.5	52.8	4.5	28.6	24.5	1.3
2009	**Total**	72	235.7	142.0				NC	29.8	61.5	1.0
2006	**Total**	88	231.9	143.4				NC	21.5	39.0	4.0
2004	**Total**	NA	185.5	167.5				NC	12.5	35.0	6.0
2001	**Total**	NA	249.7	132.0				NC	18.0	60.8	4.5
1998	**Total**	78	155.0	219.0				NC	12.1	41.3	10.8
1995	**Total**	84	215.7	294.3				NC	18.1	43.0	17.5

Note: NC = Not Collected, NA = Not Available, n = number of institutions reporting. Data prior to 2014 includes all institutions, not just institutions reporting FTEF. Prior to 2014, n included all institutions, not just those reporting FTEF. The ranking system includes full, associate, and assistant professor ranks (e.g., Ranked = full, associate, and assistant professor).

Table 11 presents the distribution of full-time equivalent faculty (FTEF) across SBAE teacher preparation programs by institution type in 2020. A total of 88 institutions reported data, with 37 classified as 1862 land-grant institutions, 6 as 1890 land-grants, and 45 as non-land-grant or private (NLG) institutions. The majority of program completers came from 1862 and NLG institutions, producing 498 and 372 graduates respectively, compared to 21 from 1890 institutions.

These figures highlight the significant variation in faculty composition and output capacity across institution types, with implications for resource allocation, faculty workload, and program sustainability.

Table 11

Faculty FTEF by Institution Type in 2020

Type	1862	1890	NLG	Total
Institutions	37	6	45	88
Program Completers	498	21	372	891
Total FTEF	128.6	11.5	82.2	222.3
Rank Full Prof	16.8	2.3	12.1	31.2
Rank Assoc Prof	21.0	2.3	22.5	45.7
Rank Asst Prof	25.3	2.0	21.1	48.4
Rank Clinical	9.2	1.0	2.1	12.3
Rank Instructor	16.9	4.0	15.0	35.8
Rank Grad TA	38.3	0.0	3.5	41.8
Rank Other	1.1	0.0	6.0	7.1
PC/FTEF	3.9	1.8	4.5	4.0
FTEF/Institution	3.3	1.9	1.9	2.5

Note: NLG = Non-Land Grant and Private

College Affiliation of Agricultural Education Faculty

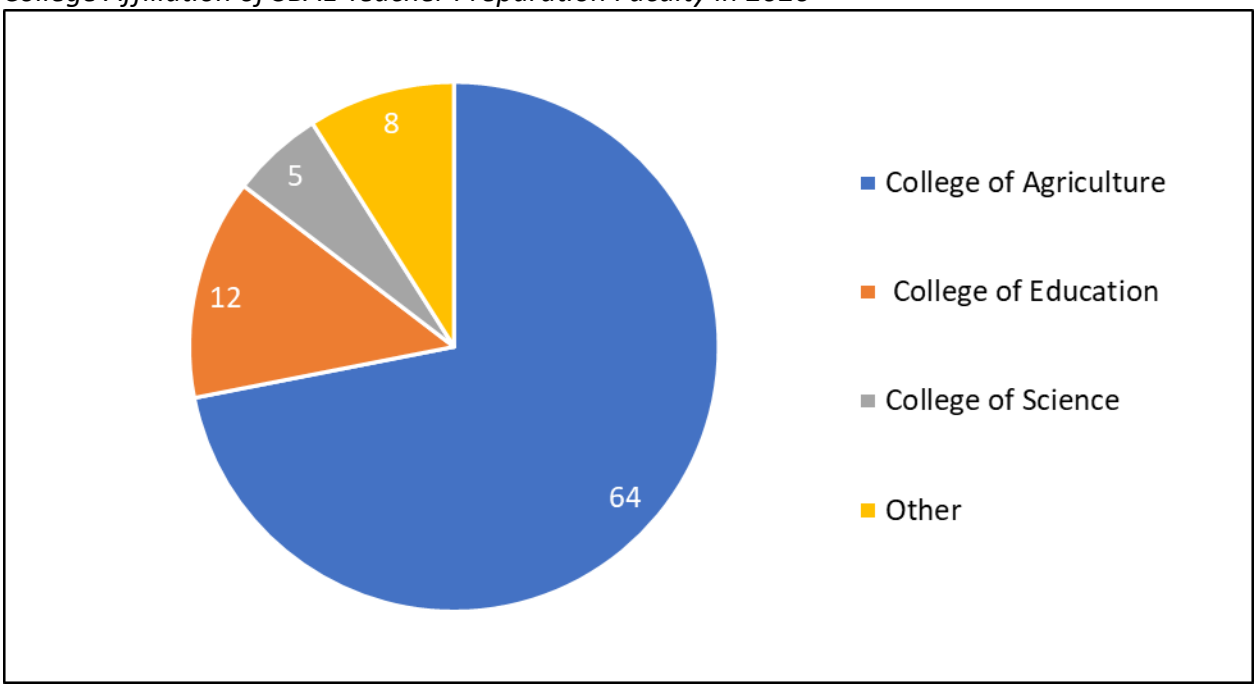
Figure 23 illustrates the college affiliations of SBAE teacher preparation faculty in 2020. The majority (72%) are based in colleges of agriculture, while 13% are in colleges of education, 6% in colleges of science, and 9% in other colleges.

For programs not affiliated with colleges of agriculture, education, or science, faculty reported various departmental or collegiate affiliations, including:

- College of Engineering and Applied Sciences
- College of Applied Science and Technology
- College of Business and Technology
- Science Division, Social Sciences and Education Division
- Department of Agriculture (Institution is a College)
- College of Applied Science

Figure 23

College Affiliation of SBAE Teacher Preparation Faculty in 2020



College Granting Undergraduate Agricultural Education Degree

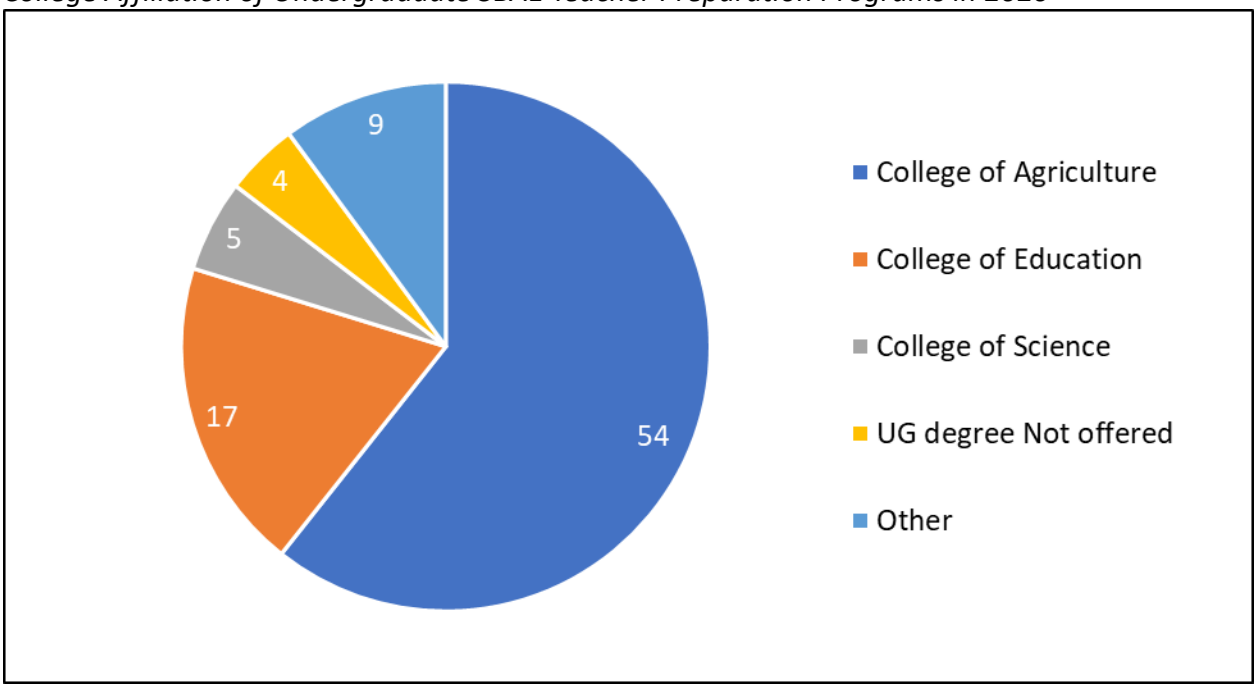
Figure 24 illustrates the distribution of undergraduate degree-granting colleges for SBAE teacher preparation in 2020. Most undergraduate students (61%) earned their degrees from colleges of agriculture, while 19% graduated from colleges of education, 6% from colleges of science, and 9% from institutions that do not offer undergraduate degrees.

For the 10% of programs not affiliated with colleges of agriculture, education, or science, institutions provided open responses indicating a range of other academic affiliations. Examples include:

- College of Engineering and Applied Sciences
- College of Applied Science and Technology
- College of Business and Technology
- No separate college
- The Institution (which is a college)
- Joint between College of Agriculture and College of Education- Education—double degree
- The student decides if they want and BA (Education) or BS Agriculture
- College of Applied Science

Figure 24

College Affiliation of Undergraduate SBAE Teacher Preparation Programs in 2020



While colleges of agriculture continue to house the majority of SBAE teacher preparation faculty, an increasing number are now based in colleges of education (Table 12). In 2020, 12% of reporting institutions indicated that their faculty were housed in a college of education, up from 9% in 2017.

A similar trend is observed in undergraduate program affiliation, with a 2.2% increase in programs housed within colleges of education since 2017. Among 1862 land-grant institutions, approximately 75% of SBAE programs remain within colleges of agriculture. At non-land-grant institutions, more than half of programs are housed outside colleges of agriculture.

Table 12

College Affiliation of Undergraduate Agricultural Education Programs by Institution Type

	1862			1890			NLG		
Type	2014	2017	2020	2014	2017	2020	2014	2017	2020
College of Agriculture	73%	81%	79%	67%	80%	50%	60%	46%	47%
College of Education	18%	10%	11%	33%	0%	33%	10%	24%	24%
College of Science	0%	0%	0%	0%	0%	0%	0%	15%	11%
Not Offered	9%	10%	5%	0%	0%	17%	0%	5%	2%
Other College	0%	0%	5%	0%	20%	0%	30%	10%	16%

Note: One private university was included with NLG.

College Granting Graduate Agricultural Education Degrees

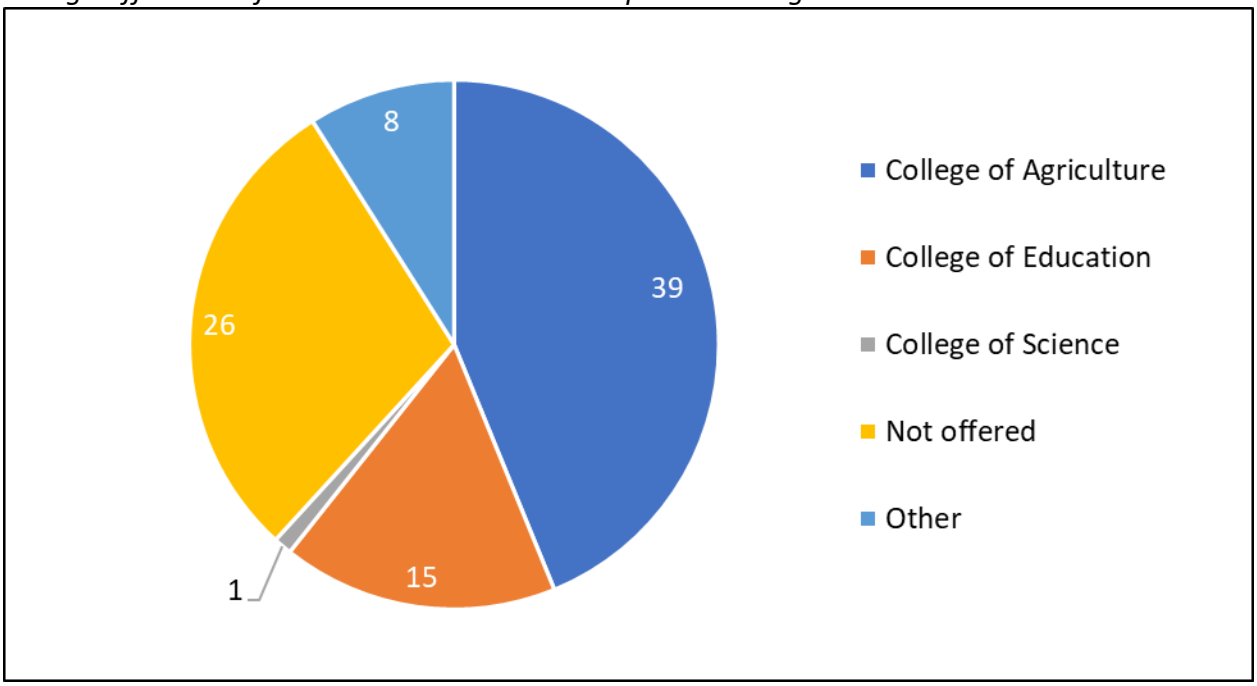
Figure 25 illustrates the college affiliations of SBAE teacher preparation graduate programs. The majority (44%) are housed in colleges of agriculture, followed by 17% in colleges of education and 1% in colleges of science. Additionally, 29% of institutions do not offer a graduate degree in SBAE.

For the 9% of graduate programs not affiliated with colleges of agriculture, education, or science, institutions provided open responses identifying other academic affiliations. Examples include:

- Graduate College
- College of Applied Science and Technology
- MS and PhD through College of Agriculture, MS in Education through College of Education
- Options exist in both the College of Education and the College of Agriculture
- MS with concentration in Ag Ed

Figure 25

College Affiliation of Graduate SBAE Teacher Preparation Programs in 2020



In 2022, there was a slight decrease in the number of SBAE teacher preparation programs compared to 2019, with all reductions occurring in the North Central region. Meanwhile, the Southern region continues to have the highest number of programs.

Table 13 provides a detailed breakdown of the total number of SBAE teacher preparation institutions identified in 2016 and 2019 across various regions.

Table 13

SBAE Teacher Preparation Programs in the U.S. in 2016, 2019 and 2022

	2016		2019		2022	
AAAE Region	Institutions	% of Total	Institutions	% of Total	Institutions	% of Total
North Central	38	38%	43	40%	39	38%
Southern	46	46%	48	45%	49	47%
Western	17	17%	16	15%	16	15%
Total	101	100%	107	100%	104	100%

Note. Appendix C provides an institutional list per AAAE Region.

Degree Programs

Table 14 outlines regional programmatic opportunities available for individuals pursuing SBAE teacher licensure. The majority of responding institutions (93%) offer a Bachelor of Science degree, while 2% offer a Bachelor of Arts degree in SBAE teacher preparation.

At the graduate level:

- 52% of institutions offer a Master of Science related to agricultural education.
- 15% offer a Master of Education degree.
- 8% offer a Master of Agriculture degree.
- 22% (20 institutions) offer a Ph.D. in agricultural education.
- 3% offer an Ed.D., and 3% offer an Ed.S.

Graduate degree offerings vary by institution and include additional specialized programs such as:

- Graduate Certificate
- Master in the Art of Teaching (MAT)
- Master of Science in Education
- Master of Agricultural and Environmental Education
- Master of Science in CTE

Table 14

Post-Secondary Degrees Offered in SBAE Teacher Preparation Programs in 2020

AAAE Region	Institutions	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
North Central	35	2	31	3	17	2	9	2	2	1	7
Southern	40	0	40	0	22	4	3	1	3	2	11
Western	14	0	12	1	7	1	1	0	1	0	2
Total	89	2	83	4	46	7	13	3	6	3	20

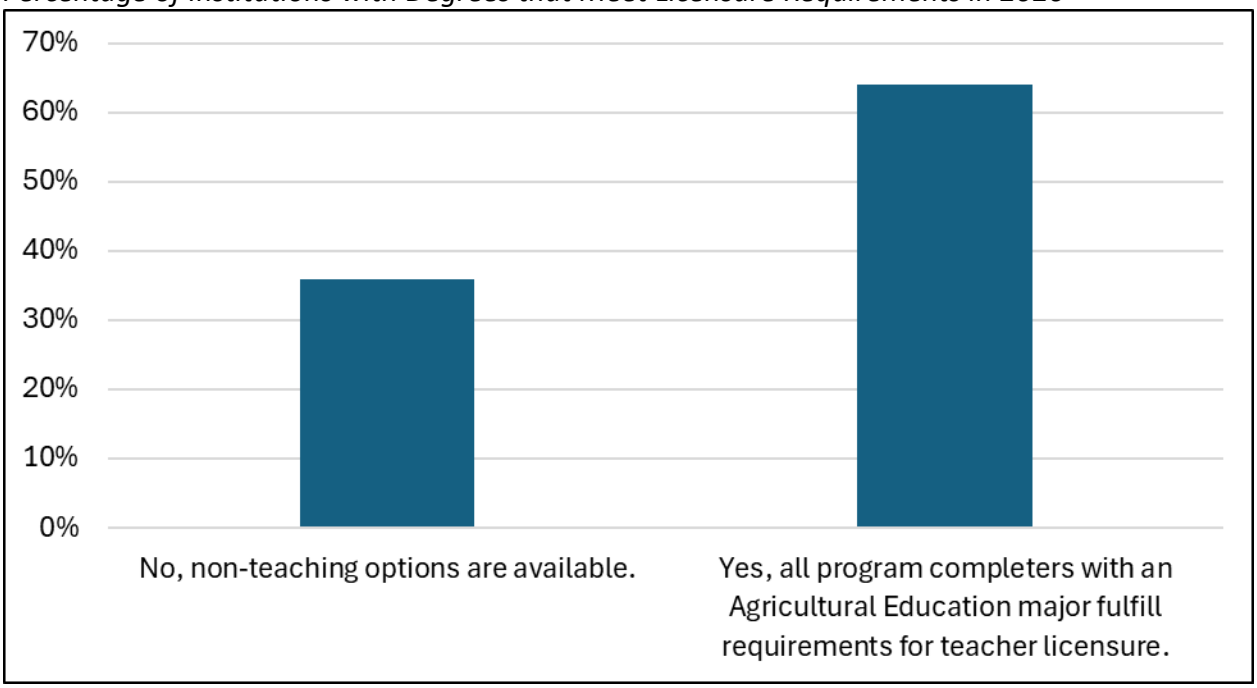
An analysis of 89 SBAE teacher preparation programs in 2020 found that 65% require all agricultural education majors to complete teacher licensure requirements, while 35% offer a non-teaching degree option (Figure 26). Institutions were invited to describe their non-teaching/licensure degree options and specializations for agricultural education majors. Additionally, within teacher preparation programs, a variety of minors and specializations were reported.

A summary of these offerings is provided below:

Agricultural and Environmental Technology
Agricultural Communications
Agricultural Education - Industry
Agricultural Education—Minor
Agricultural Education (non-licensure option)
Agricultural Education Extension
Agricultural Education Licensure
Agricultural Literacy-
Agricultural Technology Management
Agriculture Leadership Development
Civic Agriculture
Communication and Education
Communication and Leadership
Communications and Journalism
Communications and Leadership
Community and Extension Education
Community Education and Development.
Community Sustainability with specialization in AFNRE.
Community-based agricultural education
Extension Education
Food
International and Community Development
Leadership
Leadership and Social Change
Natural Resources Education
Non-formal Ag
Professional Service track
Skilled and Technical Sciences (Industrial Technology)
Teaching
Teaching Ag Ed Leadership for Social Change
Technology

Figure 26

Percentage of Institutions with Degrees that Meet Licensure Requirements in 2020



Note: n=95

Student Internships

A key component of teacher preparation programs is the culminating student teaching internship. In 2020, data was collected to examine the timing of these internships across institutions. Findings indicate that all 89 reporting institutions offer student teaching internships. However, only three institutions provide quarterly internships, reflecting a significant decline from previous years. The spring semester remains the most common timeframe for student teaching, though 55% of institutions offer internships in both spring and fall (winter) semesters.

In the North Central region, 21 institutions offered teaching internships in the fall semester, 35 in the spring semester, and 21 offered placements in both semesters. The Southern region showed similar patterns, with 22 institutions hosting fall student teaching internships, 39 in the spring, and 21 supporting both semesters. The Western region had fewer placements overall, with 6 institutions offering fall internships, 9 in the spring, and 4 supporting both semesters. These data indicate that spring remains the most common semester for student teaching placements across all regions, with North Central and Southern regions showing the greatest flexibility in offering year-round opportunities. Unique to the Western region, 3 institutions offered student teaching internships in the fall and winter quarter, and 1 in the spring and summer quarter.

The length of student teaching internships by region reveal variation in both duration and consistency. Across all reporting institutions (n = 89), internship lengths ranged from 6 to 36 weeks, with an overall mean of 15.8 weeks—an increase from the 2017 mean of 15.6 weeks. The Western region reported the highest average internship length at 18.8 weeks, with a wide range from 6 to 36 weeks. In contrast, the North Central and Southern regions had similar average durations of 15.3 and 15.2 weeks, respectively, with narrower ranges. These findings highlight regional differences in internship expectations and program structure.

Yield of Program Completers

Program completer yield represents the percentage of agricultural education graduates who secure teaching positions, either in-state or out-of-state. This metric has been consistently tracked throughout the study, as it provides insight into the actual number of program completers entering the SBAE workforce. Between 2014 and 2022, program completer yields ranged from 74% to 79%, with an average of 76%. The trend has remained relatively stable, showing a slight upward trajectory over time.

For comparative and historical analysis, Table 15 presents data on license-eligible program completers by region from 2014 to 2022. The table also includes the number of program completers accepting positions in-state and out-of-state, and the percentage yield for each region and year. Since 2014, there has been a steady increase in yield, contributing to meeting the growing demand for SBAE teachers (Figure 27).

Table 15

Yield of Program Completers Accepting Positions in School-Based Agricultural Education

Year	Region	Program Completers	SBAE In State	SBAE Out of State	Total SBAE	Yield
2014	North Central	204	120	20	140	69%
	Southern	430	270	17	287	67%
	Western	112	79	8	87	78%
	Total	746	469	45	514	69%
2015	North Central	224	127	26	153	68%
	Southern	384	230	29	259	67%
	Western	125	82	11	93	74%
	Total	733	439	66	505	69%
2016	North Central	223	141	30	171	77%
	Southern	412	260	20	276	67%
	Western	137	107	11	118	86%
	Total	772	508	61	565	73%
2017	North Central	224	141	26	167	75%
	Southern	387	247	25	272	70%
	Western	112	90	10	100	89%
	Total	723	478	61	539	75%

Year	Region	Program Completers	SBAE In State	SBAE Out of State	Total SBAE	Yield
2018	North Central	279	190	30	220	79%
	Southern	448	286	23	309	69%
	Western	146	108	17	125	86%
	Total	873	584	70	654	75%
2019	North Central	312	196	38	234	75%
	Southern	443	308	28	336	76%
	Western	149	122	8	130	87%
	Total	904	626	74	700	77%
2020	North Central	296	182	36	218	74%
	Southern	454	301	27	328	72%
	Western	147	104	11	115	78%
	Total	897	587	74	661	74%
2021	North Central	298	187	38	225	76%
	Southern	376	248	19	267	71%
	Western	111	80	10	90	81%
	Total	785	515	67	582	74%
2022	North Central	311	206	38	244	78%
	Southern	394	274	29	303	77%
	Western	149	112	12	124	83%
	Total	854	592	79	671	79%

Note: n=89, 90, 95, 89, 80, 86, 89, 80, 86, respectively for 2017, 2018, 2019, 2020, 2021, and 2022.

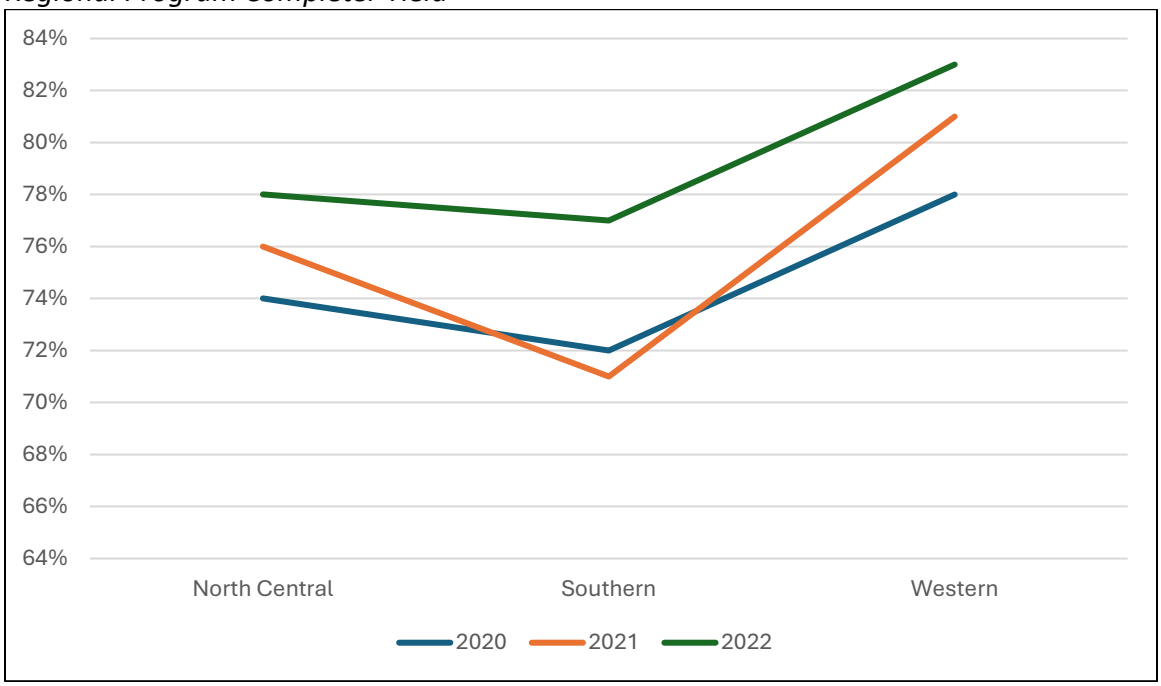
From 2014 to 2022, the average percentage yield of program completers securing SBAE teaching positions across all regions was 74%. However, yield rates vary by region, with the Western region consistently reporting the highest yields, averaging 81%. Regional yield averages over this period:

- Western Region: 81%
- North Central Region: 76%
- Southern Region: 73%

The prevalence of post-baccalaureate programs in the Western region may contribute to its higher yield rate, as these programs often produce graduates who are more committed to entering the teaching profession. Figure 27 represents the last three years of data.

Figure 27

Regional Program Completer Yield



Production of Program Completers

Between 2020 and 2022, 67% of responding institutions produced an average of 10 or fewer program completers per year (Table 16). Figure 28 illustrates the distribution of programs based on completer production, using an average over the study period. Among land-grant institutions, 63% produced 10 or fewer program completers per year, while only 2% produced more than 30. Among non-land-grant universities, 70% produced 10 or fewer completers, while 6% exceeded 30.

While the program completer-to-faculty (PC/FTEF) ratio is a useful metric, it does not fully capture faculty workload, as they support a larger undergraduate student population, including students who do not complete the program (attrition) and transfer students entering the program at later stages.

To better understand faculty workload and program size, incorporating an undergraduate student census in future supply surveys could provide valuable insights. Additionally, strengthening transfer pathways for SBAE teacher preparation may help reduce faculty load at four-year institutions while maintaining a steady supply of program completers

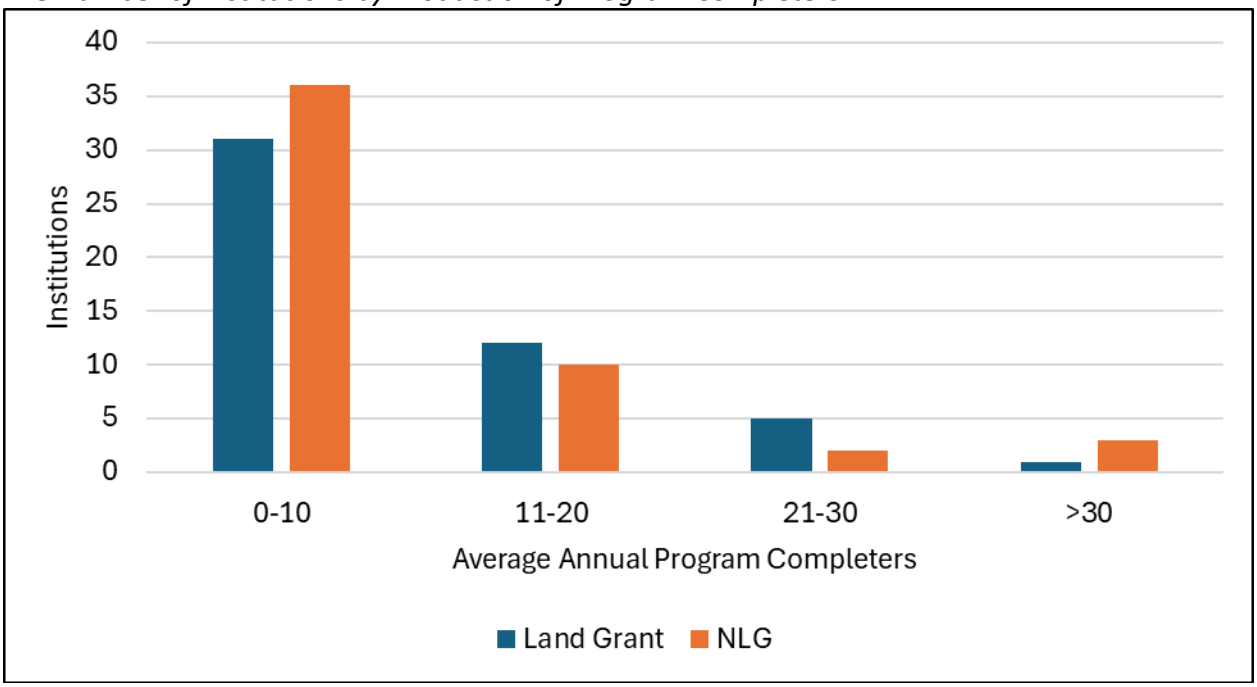
Table 16

Program Size by Program Completer Production

Program Completers	Institutions	Percent
0-10	67	67%
11-20	22	22%
21-30	7	7%
>30	4	4%
Total	100	100%

Figure 28

The Number of Institutions by Production of Program Completers



As part of the 2020 data collection, the research team sought to identify the unique challenges faced by agricultural teacher educators. A comprehensive survey instrument was used, including open-ended responses that allowed educators to share institution-specific challenges and broader concerns about the profession. Through analysis, the research team identified five key thematic areas. Table 20 presents each theme along with representative quotes illustrating the issue. A complete set of responses is available in the appendix.

Table 17

Unique Challenges and Opportunities of Agricultural Teacher Education as Reported in 2020

Identified Theme	Sample Quote
Program Structure and Offerings	In fall of 2020 we added an agricultural education teaching certificate program to our college which is a post-baccalaureate program for students who wish to "add on" a teaching certificate while completing their BS degree in an AFNR related major.
Challenges in Staffing and Enrollment	Too many students and too few faculty. Each faculty member advises over 70 students and teaches overloaded classes.
Student Teaching and Field Experience	Finding qualified schools, by the State Leadership, near the university to place the student teachers.
Program Quality and Accreditation	We have worked very hard to align with our School of Education's secondary credential program and were recently awarded a full 7-year (max possible) accreditation from our California Commission on Teacher Credentialing.
Diversity, Equity, and Perception Issues	We are seeing a divide in our state as a whole in values rural conservative/urban liberal. As an institution, we are seen as liberal, which is impacting our ability to convince students from our rural areas to come and study.

Teacher Educator Prediction of Supply

Since 2014, agricultural teacher educators reporting to the AAAE National Supply and Demand project have been asked to estimate the number of license-eligible program completers for the following three years. Table 18 presents these predicted program completer numbers on an annual basis. Historically, the actual number of program completers has been approximately 10% lower than the predicted figures. Projections for 2023–2025 indicate a similar trend, with expected program completer numbers remaining consistent with previous years.

Table 18

Agricultural Teacher Educator Supply Prediction Vs. Actual

	Actual	1 Year Prediction		2 Year Prediction		3 Year Prediction	
Region	PC	PC	%	PC	%	PC	%
2020		2019		2018		2017	
North Central	296	314	106%	331	112%	375	127%
Southern	454	464	102%	510	112%	545	120%
Western	147	160	109%	197	134%	164	112%
Total	897	938	105%	1038	116%	1084	121%
2021		2020		2019		2018	
North Central	298	318	107%	373	125%	359	120%
Southern	376	469	125%	527	140%	580	154%
Western	111	163	147%	170	153%	205	185%
Total	785	950	121%	1070	136%	1144	146%
2022		2021		2020		2019	
North Central	311	318	102%	361	116%	341	110%
Southern	394	412	105%	546	139%	552	140%
Western	149	116	78%	171	115%	187	126%
Total	854	846	99%	1078	126%	1080	126%
2023		2022		2021		2020	
North Central		297		128		335	
Southern		326		307		545	
Western		190		394		190	
Total		813		829		1070	

Region	Actual	1 Year Prediction	2 Year Prediction	3 Year Prediction	Region	Actual	1 Year Prediction
2024				2022		2021	
North Central				307		322	
Southern				394		478	
Western				196		130	
Total				897		930	
2025						2022	
North Central						302	
Southern						408	
Western						212	
Total						922	

Impact of COVID-19 on Agriculture Education Teacher Preparation

To assess the impact of the COVID-19 pandemic on agricultural education teacher preparation, three targeted questions were added to the 2020 supply survey.

Question 1:

How would you describe your Ag Ed students' level of preparation for virtual or hybrid learning required throughout the COVID-19 pandemic?

Emerging Themes:

1. **Minimal to Limited Preparation**
   Many students entered the pandemic with little experience in virtual instruction. Their exposure to online learning was primarily as consumers of content via platforms like Canvas.
   a. *"They were ultimately not very prepared, but they adapted easily."*
   b. *"Students made the necessary transitions but had very limited experience."*
2. **Adaptation and Learning on the Go**
   Despite initial challenges, students demonstrated resilience and a willingness to learn new skills rapidly.
   a. *"Most adapted extremely well and were able to work with their cooperating teacher."*
   b. *"Our student teachers adjusted, and we modified our methods courses to include virtual teaching methods."*

3. **Technology Proficiency, but Limited Teaching Experience**
   While students had strong general digital literacy, they lacked specific pedagogical skills for online teaching.
   a. *"General computer/internet knowledge is high, but nothing could have prepared them for the virtual world they entered."*
   b. *"Candidates were familiar with using the technology as a student/consumer, but less familiar in teaching with it."*
4. **Preparation Improved Over Time**
   Later cohorts benefited from earlier experiences, with institutions integrating virtual teaching into their curriculum.
   a. *"Graduates from 2020 were as 'caught-off-guard' as we were. Current interns and graduates for 2021 are better prepared."*
   b. *"Students were moderately prepared due to their exposure to remote learning in our program."*
5. **Varied and Context-Dependent Experiences**
   Student preparation varied significantly by institutional program, internet access, and student teaching placement.
   a. *"The lack of reliable internet access has been the hardest item for them to overcome."*
   b. *"Agriculture classes have been virtual, but labs have been face-to-face."*

Question 2:

To your knowledge, did the COVID-19 pandemic impact the career choice of 2021 program completers?

Responses to this question were categorized by the level of impact and are summarized in Table 19.

Table 19

Impact of COVID-19 Pandemic on Program Completer Career Choice

Perceived Impact	Number of Institutions
No Impact (or Very Minimal)	31
Minimal or Isolated Impact	10
Significant Impact	10
Unclear or Ambiguous Responses	1
Total	52

Question 3:

Describe any specific changes your Ag Ed teacher preparation program made because of the COVID-19 pandemic.

Emerging Themes:

1. **Shift to Online and Hybrid Instruction**
   Programs quickly transitioned from traditional in-person formats to fully online or hybrid models. This included the use of learning management systems (LMS) such as Canvas, Google Classroom, and D2L Collaborate, as well as innovative platforms like SimSchool and GoReact.
   a. *"We moved all content to online delivery using Canvas and Zoom."*
   b. *"Hybrid courses were developed to maintain social distancing while preserving hands-on learning."*
2. **Restructuring of Student Teaching and Observation**
   Due to restricted access to K–12 schools, programs implemented virtual student teaching experiences and digital observation strategies. Supervision and feedback increasingly relied on video tools and online collaboration.
   a. *"Virtual observations became the norm, with GoReact and Teaching Channel used for feedback."*
   b. *"We adapted field experiences through simulations and online mentoring."*
3. **Increased Emphasis on Technology Integration**
   Recognizing gaps in candidates' readiness for virtual instruction, methods courses incorporated online teaching strategies and digital pedagogy.
   a. *"We added content focused on designing and delivering asynchronous lessons."*
   b. *"Marco Polo videos were used for students to reflect on their teaching practices."*
4. **Program Flexibility and Course Redesign**
   Courses were adapted to be more flexible and responsive to changing health guidelines, with revised syllabi and adjusted course objectives to fit new formats.
   a. *"We modified syllabi and grading to be more adaptable."*
   b. *"Internship requirements were adjusted to allow for alternative teaching formats."*
5. **Strategies to Maintain Student Engagement**
   Programs adopted new approaches to ensure student connection and success despite remote conditions.
   a. *"We held weekly virtual check-ins to keep students engaged and supported."*
   b. *"Increased one-on-one communication helped maintain a sense of community."*

In response to the disruptions caused by the COVID-19 pandemic, agricultural education teacher preparation programs demonstrated flexibility by adapting key requirements and assessments. Deadlines for licensure exams such as the ETS Praxis were extended, and observation and student teaching requirements were modified to accommodate remote and hybrid learning environments. In some instances, professional development hours were

accepted in place of traditional field experiences. These adjustments ensured that teacher candidates could continue progressing toward licensure despite unprecedented barriers.

Programs also prioritized maintaining student engagement and connection. Strategies included socially distanced in-person gatherings, increased outreach via texts, emails, and phone calls, and encouragement to participate in virtual professional communities. Clinical experiences were restructured to promote a sense of belonging and ongoing support among candidates.

Ultimately, the pandemic prompted rapid innovation in the use of technology and the development of flexible learning structures. However, these necessary adaptations often came at the cost of reduced hands-on teaching experiences. As a result, there are lingering questions about the long-term implications for candidates who entered the profession with fewer traditional internship opportunities.

Conclusions, Discussion, and Implications

SBAE Teacher Preparation Faculty & Programs

A gradual shift of agricultural education programs from colleges of agriculture to colleges of education has emerged, with a 3% change over three years. This transition presents potential challenges for faculty delivering agriculture-based programs. These challenges include limitations on internship placements, a reduced understanding of school-based agricultural education (SBAE) as a field that prepares students for more than just classroom instruction, and decreased interaction with colleges of agriculture, where subject matter instruction is traditionally housed.

Faculty numbers in agricultural education programs have also declined. According to data from the Food and Agricultural Education Information System (FAEIS), the number of ranked faculty in 48 colleges of agriculture decreased by 7.7% between 2014 and 2022 (FAEIS, personal communication, 11/10/2024). A similar decline is evident in teacher preparation faculty, which saw a 5% decrease from 2014 to 2020. Within ranked faculty, the percentage of full professors dropped from 38% in 2014 to 22% in 2020, suggesting a wave of retirements among senior faculty. A decline in full-time equivalent faculty (FTEF) reduces the capacity to prepare future educators, potentially limiting the supply of new teachers at a time when demand is rising.

Regional trends further illustrate disparities in faculty availability. Comparing total reported FTEF from 2014 to 2020, the North Central region saw a 6% increase, while the Southern and Western regions experienced decreases of 11% and 27%, respectively. Some variation may be attributed to differences in institutional reporting, as the number of institutions submitting data declined from 90 in 2014 to 88 in 2020. However, normalizing the data by the number of reporting institutions reveals a different picture: the North Central region experienced a 10% decline, the Southern region a 2% decline, and the Western region a 9% decline.

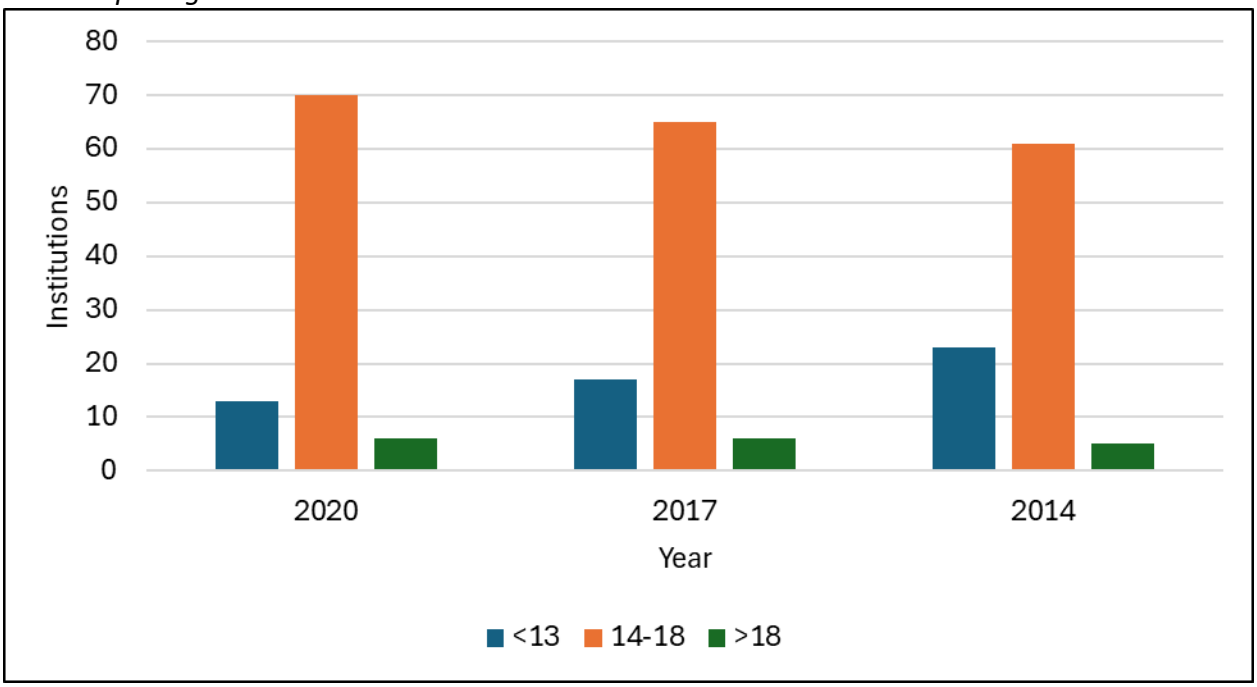
These trends highlight significant shifts in faculty composition and program alignment, raising concerns about the future capacity of agricultural education programs to meet workforce demands. The decline in senior faculty, combined with structural changes in program placement, suggests an urgent need for strategic efforts to sustain and strengthen the agricultural education pipeline.

Student Teaching Internships

The student teaching internship is a crucial component of SBAE teacher preparation programs. Data from 2020 indicates that most institutions schedule these culminating internships during the spring semester, with a substantial number also offering fall semester placements. However, only a small percentage (3%) provide internships exclusively in the fall or operate on a quarter system schedule. Additionally, from 2014 to 2020, there has been a consistent trend toward extending the length of student teaching internships, reflecting an ongoing emphasis on providing candidates with more comprehensive hands-on experience (Figure 29) or evolving licensure requirements.

Figure 29

Internship Length



Note: 90, 89, and 89 institutions reported in 2014, 2017, and 2020 respectively.

Yield

The number of program completers entering school-based agricultural education (SBAE) teaching positions has continued to rise, a positive indicator for strengthening the supply of new teachers. Identifying the characteristics of high-yield programs and sharing best practices

could further support this trend. Additionally, understanding why some program completers choose not to enter teaching is essential. Factors such as geographic mobility constraints may prevent individuals from accepting SBAE positions immediately, though they may consider teaching in the future. Exploring these factors could inform recruitment and retention strategies for the profession.

Teacher Licensure and Non-Teaching Options

The majority of SBAE teacher preparation programs require all agricultural education majors to complete teacher licensure requirements, underscoring a strong emphasis on preparing students for teaching careers. However, many programs also offer non-teaching options, reflecting a broader understanding of career pathways within agricultural education. The range of non-teaching minors and specializations highlights the program's flexibility, accommodating students interested in communication, leadership, extension, and other related fields. This adaptability allows institutions to serve a diverse student body while responding to evolving industry needs. Notably, there appears to be no significant correlation between program completer yield and whether a degree includes full teacher licensure requirements.

Degrees Offered

The number of Ph.D. programs in agricultural education have increased significantly. In 2020, 20 institutions reported offering Ph.D. programs, compared to 16 in both 2014 and 2017. Doctoral students play a vital role in supplementing faculty as teaching assistants and temporary instructors while also representing future teacher preparation faculty. As agricultural education programs consider expansion, this growing pool of doctoral students may be a critical factor in sustaining and increasing faculty capacity.

Objective 3: Describe Characteristics of Licensed Program Completers.

Findings

Objective 3 facilitated a comprehensive analysis of the 2,536 individuals who successfully completed the teacher licensure process in agricultural education between 2020 and 2022. For this study, "program completers" were defined as graduates of agricultural teacher preparation programs who met all licensure requirements. The data collected under this objective provides a foundation for longitudinal studies, enabling ongoing assessment of representation and demographic trends within school-based agricultural education (SBAE).

Over the three-year period, the total number of program completers fluctuated, though a slight downward trend emerged. Female program completers consistently outnumbered male counterparts each year, contributing to a growing gender disparity within the field. In terms of racial and ethnic composition, program completers remain predominantly white, even as the national secondary student population becomes increasingly diverse. While the number of Hispanic secondary students continues to rise, this demographic shift has not yet been reflected

in SBAE teacher preparation program completers (National Center for Education Statistics, 2024a).

Employment Plans of Program Completers

Table 20 presents the intended employment plans of license-eligible program completers from the 2020–2022 data collection period. During this time, 2,536 individuals—an increase from 2,500 in the 2017–2019 period—graduated with a teaching license in agricultural education. The majority (76%) pursued careers as school-based agriculture teachers, while the remaining 24% sought employment in other fields. This distribution remains consistent with findings from the previous reporting period, indicating a stable trend in the career choices of program completers.

Table 20

Employment Plans of License-Eligible Program Completers

Year	2020	2021	2022	Total	%
Institutions	79	78	86		
Program Completers	897	785	854	2536	100%
SBAE in State	587	515	592	1694	67%
Teaching Other Subject	55	44	33	132	5%
SBAE Out of State	74	67	79	220	9%
Agribusiness	42	43	34	119	5%
Extension	7	13	16	36	1%
Production Ag	8	6	6	20	1%
Graduate school	59	51	38	148	6%
Other Employment	34	22	30	86	3%
Military	4	0	1	5	0%
Unknown	22	19	17	58	2%
Unemployed/Undecided	5	5	8	18	1%

Demographics of Program Completers

This study examined the demographics of individuals who completed licensure requirements from 2020–2022 (N = 2,536). Most program completers were female (75%), with males comprising 25% and one individual (<1%) identifying as non-binary. This marks an increase in female program completers compared to the 2017–2019 period, when 71% of completers were reported as female.

As shown in Figure 30, the racial composition of program completers has remained largely unchanged. In the 2017–2019 period, 88% of license-eligible completers identified as white, a number that increased slightly to 89% in 2020–2022. Table 21 provides a breakdown of

ethnicity by gender, further highlighting that program completers continue to be predominantly female and white.

Figure 30

Race of Program Completers from 2020-2022

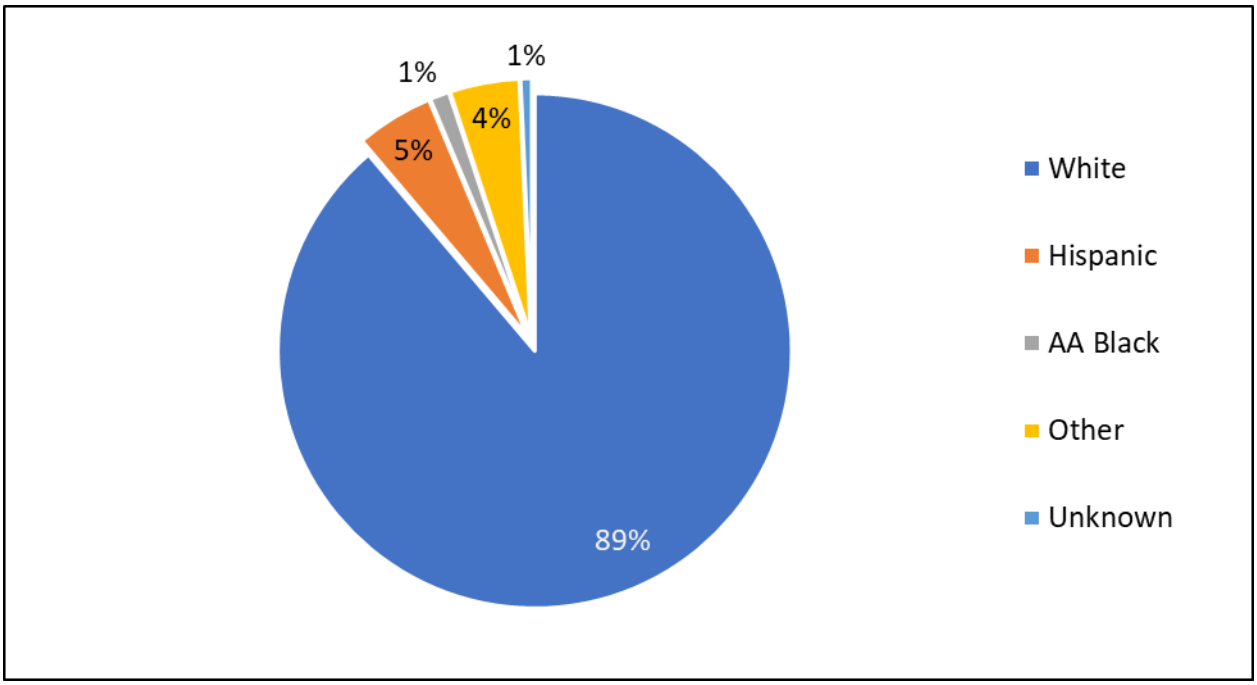


Table 21

Ethnicity of Program Completers by Gender (Percentage)

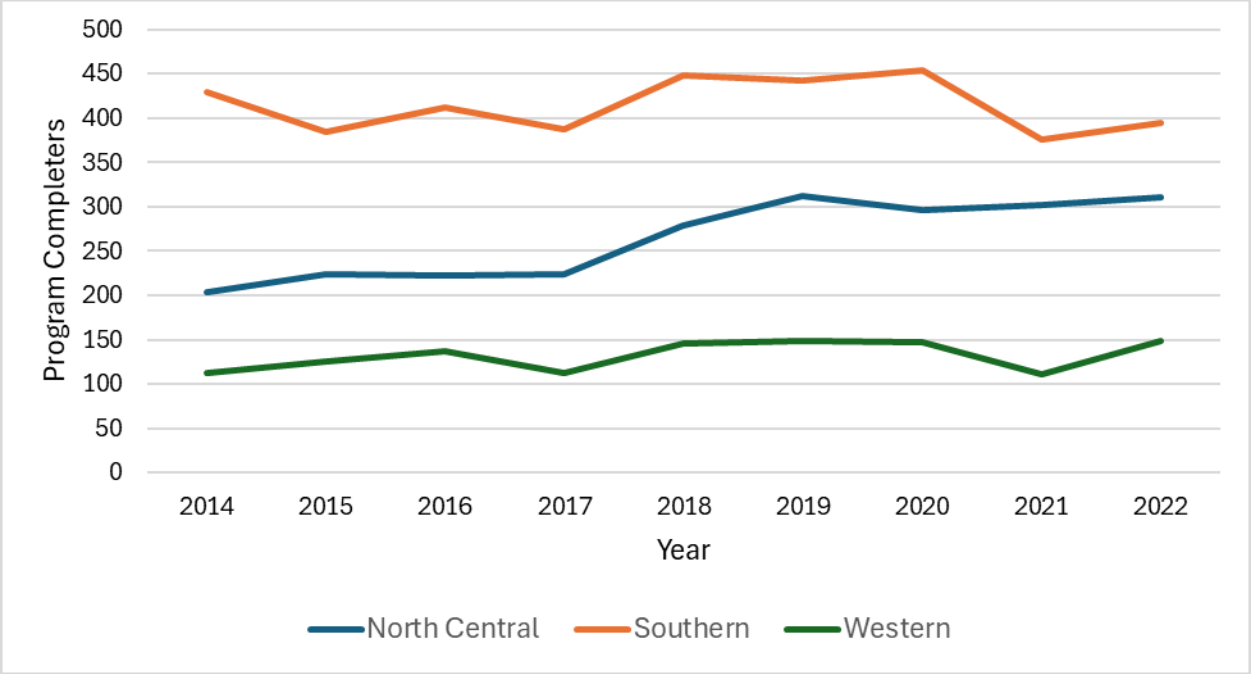
	Female			Male			Non-Binary			Total		
Race	2020	2021	2022	2020	2021	2022	2020	2021	2022	2020	2021	2022
AA	0.6	0.7	2.5	0.0	0.5	2.8			0.0	0.4	0.6	1.2%
AI/AN	1.0	0.8	1.1	1.8	1.6	2.3			0.0	1.2	1.0	1.2%
Asian	0.1	0.3	0.5	0.4	0.0	0.9			0.0	0.2	0.3	0.4%
Hispanic	5.6	3.5	4.4	7.1	5.3	5.1			0.0	6.0	4.0	4.8%
Multi	0.9	0.7	1.6	0.4	1.1	0.9			0.0	0.8	0.8	1.0%
NH/PI	0.1	0.0	0.0	0.0	0.0	0.0			0.0	0.1	0.0	0.0%
Other	2.4	1.3	3.0	0.0	0.0	0.9			0.0	1.8	1.0	1.8%
Unknown	0.0	0.0	2.2	0.0	0.0	1.9			0.0	0.0	0.0	0.7%
White	89.2	92.6	84.8	90.2	91.6	85.1			100.0	89.4	92.3	88.9%

Note: AA=African American, AI/AN= American Indian/Alaska Native, NH/PI= Native Hawaiian/Pacific Islander

Regional data on program completers has been tracked from 2011 to present, revealing notable differences across geographic areas. As shown in Figure 31, the Southern region consistently produces the highest number of program completers; however, this region has experienced a declining trend in recent years. In contrast, the Western and North Central regions have shown an upward trajectory, with an increasing number of program completers over time. These regional shifts highlight evolving patterns in agricultural education teacher preparation and may have implications for workforce distribution and program capacity in different parts of the country.

Figure 31

Trends in Program Completers by Region



Program Completers by Institution Type

The project team classified contributing institutions into three categories: 1862 Land-Grant Institutions, 1890 Land-Grant Institutions, and Non-Land-Grant Institutions (including private institutions), based on data submitted to the National Supply and Demand Project. 1862 Land-Grant Institutions were established under the Morrill Act of 1862, designated by state legislatures or Congress to focus on agricultural and mechanical research. In contrast, 1890 Land-Grant Institutions were founded under the second Morrill Act of 1890 to provide educational opportunities in agriculture and mechanical fields specifically for African Americans in the segregated South.

As shown in Table 22, Land-Grant Institutions collectively prepared 57% of all program completers during the three-year period, a slight decrease from 58% in the previous report. On average, 1862 Land-Grant Institutions produce 12 program completers per year, while Non-

Land-Grant Institutions produce 9 per year. These figures highlight the continued role of Land-Grant Institutions in preparing most future school-based agricultural educators.

Table 22

Program Completers by Institution Type

	2020			2021			2022		
Institution Type	1862	1890	NLG	1862	1890	NLG	1862	1890	NLG
Institutions Reporting	39	6	44	38	5	37	40	4	42
Program Completers	504	21	372	441	4	340	463	8	383

Note: NLG = Non-Land Grant (includes one private university).

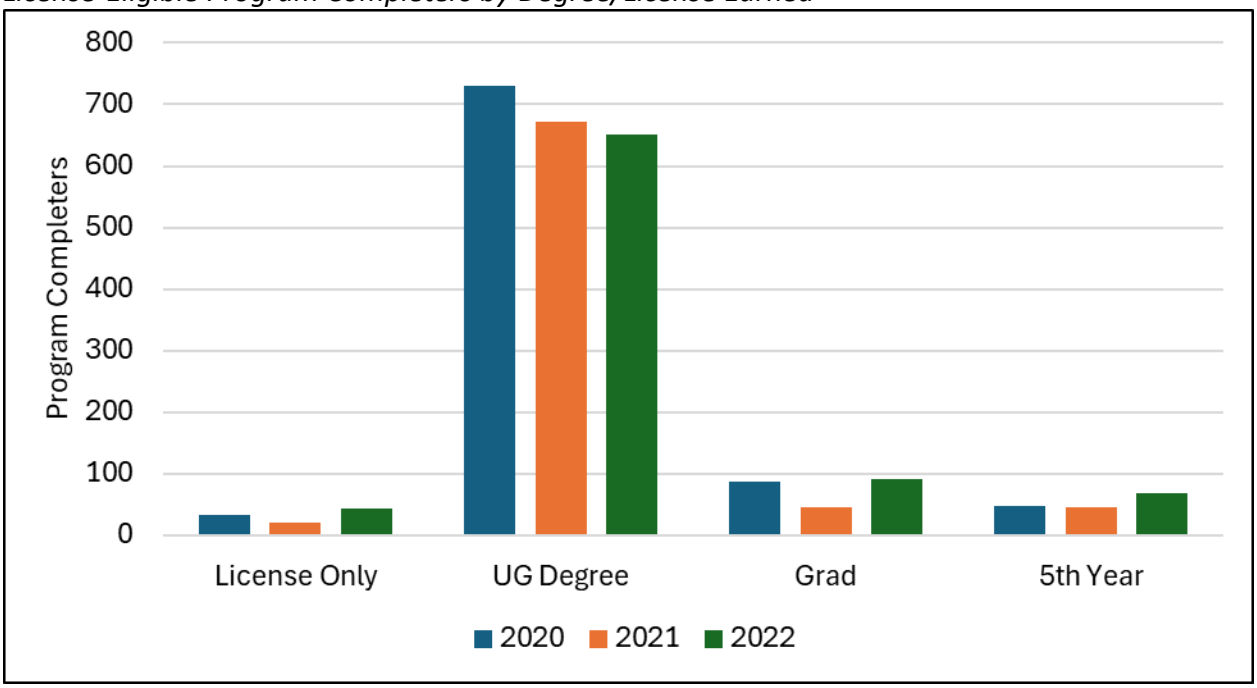
Pathway to a degree and/or license

The first step in analyzing program completers is to examine their pathways to licensure on an annual basis. Consistent with trends from previous National Supply and Demand Project reports, the undergraduate education pathway remains the most common route for license-eligible program completers. As shown in Figure 32, most program completers, 81%, earned their teaching license through an undergraduate degree program. An additional 6% completed a fifth-year program, while 9% obtained a graduate degree. The remaining 4% earned licensure through a license-only program.

Several factors influence these trends, including state licensure requirements, the number of program completers produced, and institutional reporting practices. Understanding these variations helps provide insight into the evolving landscape of agricultural education teacher preparation.

Figure 32

License-Eligible Program Completers by Degree/License Earned



Note: n=79n = 79, 78, and 86 for 2020,2021, and 2022 respectively.

Conclusions, Discussion, and Implications

Program Completers

The overall number of program completers is increasing; however, the rate of growth is not sufficient to meet the rising demand for agricultural education teachers. Institutions should explore opportunities to expand program output, which may include enhanced recruitment efforts and strategies aimed at improving student retention. Programs with high program completers per full-time equivalent faculty (PC/FTEF) ratios may be operating at or near capacity and should consider options for growing faculty numbers to support increased enrollment.

The broader profession can play a vital role by promoting and sharing effective practices that have successfully boosted the number of traditionally trained teachers. Additionally, not all institutions with colleges of agriculture currently offer teacher preparation programs. Expanding the number of institutions that provide these programs may contribute to increasing the overall supply of qualified teachers.

Program Completers Gender and Race and Institution Type

Data consistently show a gender disparity among program completers, with female program completers outnumbering male counterparts each year. This persistent trend

highlights an ongoing gender imbalance in agricultural education. To address this, school-based agricultural education (SBAE) teacher preparation programs, state associations, and related stakeholders should consider targeted strategies to increase male participation. Outreach efforts, scholarships, and awareness campaigns can help attract more men to the profession and support the development of a more gender-balanced workforce.

Program completers also remain predominantly white, although there has been a modest increase in non-white completers during the reporting period. Since colleges of agriculture enroll a more diverse student population than those completing teacher preparation programs (FAEIS, 2024), the primary barrier for non-white students appears to occur after college entry. This suggests a need for intentional recruitment and retention efforts aimed at supporting underrepresented students within teacher preparation pathways. Institutions could strengthen diversity by offering financial support, mentorship opportunities, and academic services tailored to the needs of these students. Regular monitoring and evaluation of diversity initiatives will be critical in assessing their effectiveness and guiding future improvements. A data-informed approach will allow programs to refine their efforts and create more inclusive environments.

Among institution types, 1862 land-grant universities continue to graduate the largest number of program completers, followed by non-land-grant and private institutions. This underscores the central role of 1862 institutions in preparing SBAE teachers, especially in states where they serve as the primary provider. However, graduates from 1862 land-grants tend to be less racially diverse than those from other types of institutions.

Gender disparities are also evident across institutional categories. Female representation is slightly higher at land-grant institutions (1862 and 1890), at 76%, compared to 75% at non-land-grant institutions. In terms of racial diversity, non-land-grant institutions report marginally higher diversity—about two percentage points more—than their land-grant counterparts (Table 23). These findings reinforce the importance of sustained efforts to improve both gender and racial diversity across all institutional types, helping ensure the agricultural education workforce reflects the demographics of the broader population it aims to serve.

Table 23

Percentage of Program Completers by Institution Type

	2020			2021			2022		
Institution Type	1862	1890	NLG	1862	1890	NLG	1862	1890	NLG
Institutions Reporting	39	6	44	38	5	37	40	4	42
Program Completers	100%	100%	100%	100%	100%	100%	100%	100%	100%
Female	75%	95%	73%	78%	100%	71%	73%	63%	77%
Male	25%	5%	27%	22%	0%	26%	27%	38%	23%
Non-Binary	0%	0%	0%	0%	0%	0%	0%	0%	0%
White	91%	76%	88%	91%	75%	94%	88%	38%	82%
Non-White	9%	24%	12%	9%	25%	6%	12%	63%	18%
Hispanic	4%	5%	9%	3%	25%	5%	3%	0%	7%
AA Black	0%	5%	0%	0%	0%	1%	1%	63%	3%
AI/AN	2%	5%	1%	2%	0%	0%	3%	0%	0%
Asian	0%	0%	1%	0%	0%	0%	1%	0%	0%
Multi	1%	0%	1%	1%	0%	0%	2%	0%	1%
NH/PI	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other	3%	10%	0%	2%	0%	0%	0%	0%	5%
Unknown	0%	0%	0%	0%	0%	0%	2%	0%	1%

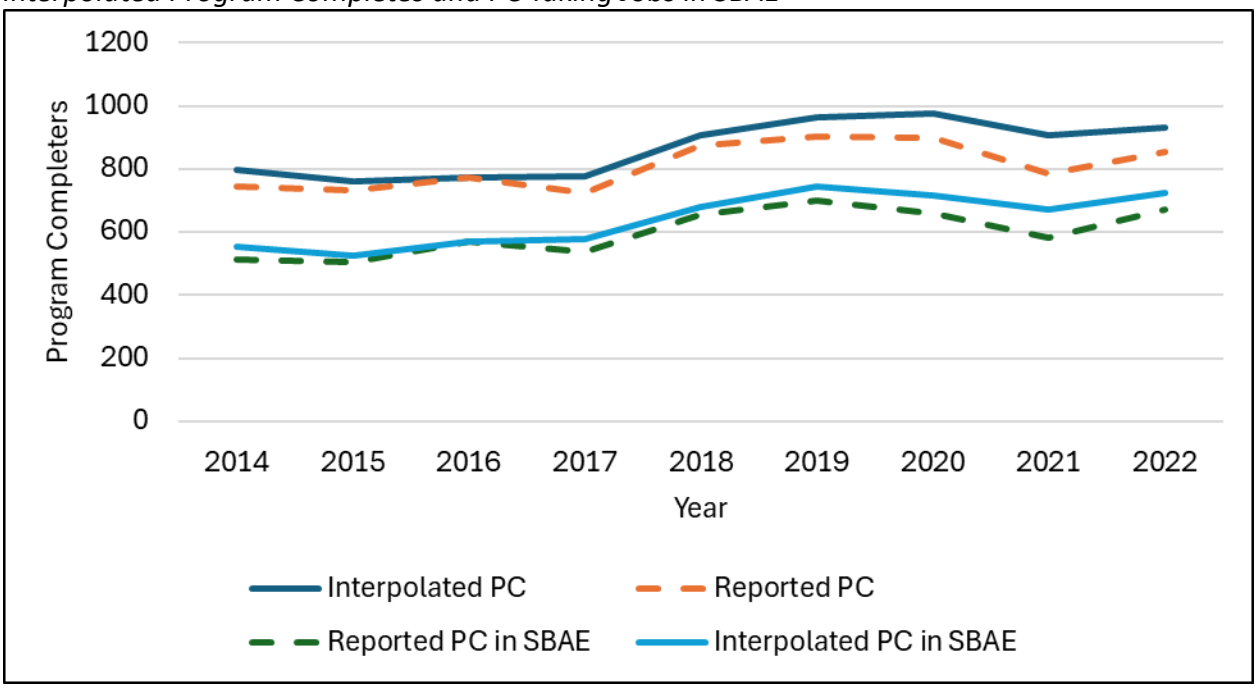
Note1: NLG = Non-Land Grant (includes one private university).
Note2: Non-White = Total PC-White.

Interpolated Program Completers and Yield

To gain a clearer understanding of program completer production, missing data were imputed (Figure 33). As expected, the variance between reported and interpolated values increased as response rates declined. On average, the imputed data suggest that the total number of program completers is underreported by approximately 7%, with some years experiencing an underreporting rate exceeding 15%. Despite these adjustments, the imputation process had a minimal effect on yield, indicating that while total program completer counts may be underestimated, the proportion of graduates entering school-based agricultural education remains relatively stable.

Figure 33

Interpolated Program Completes and PC Taking Jobs in SBAE

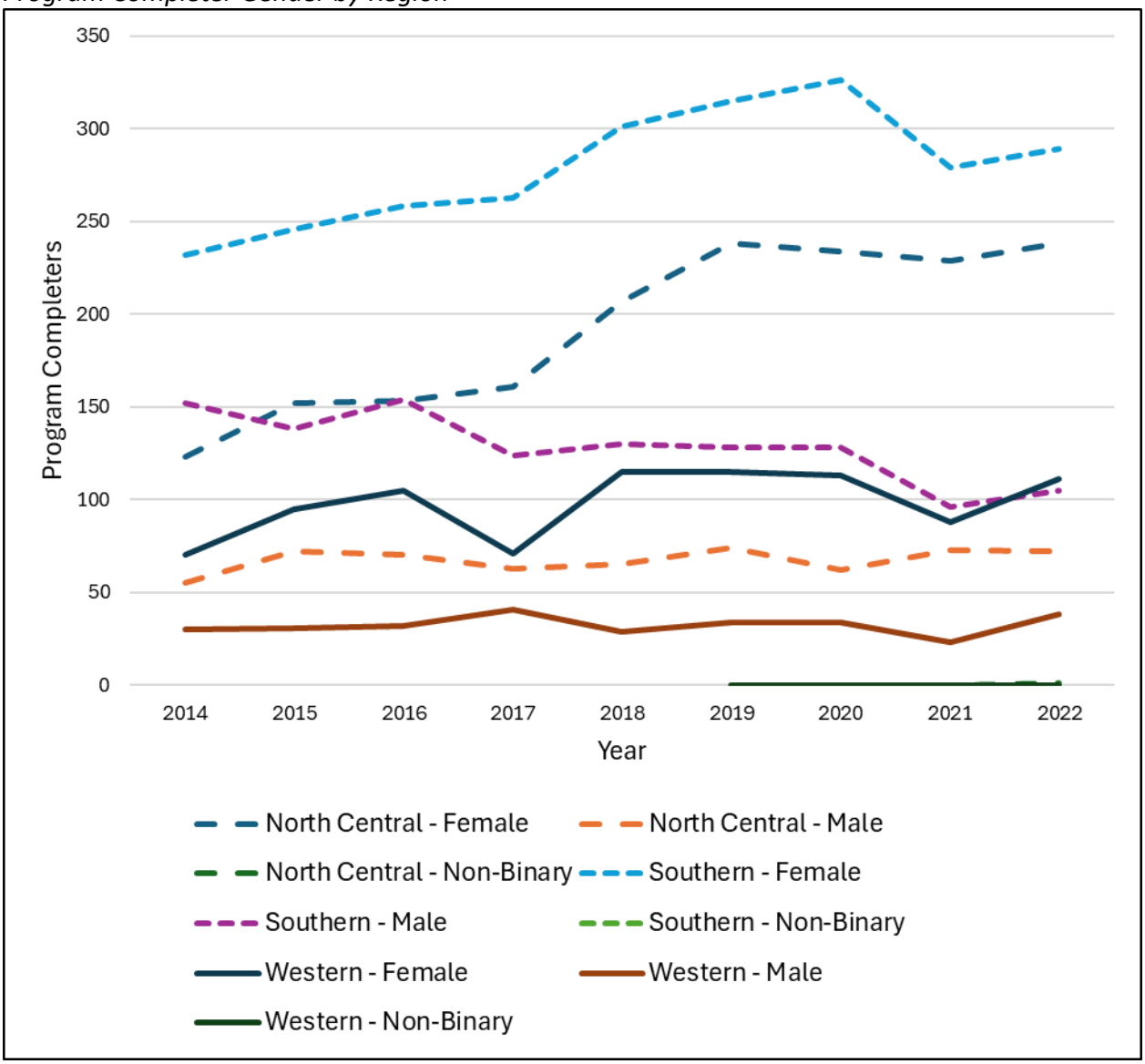


Regional Differences

Notable regional differences exist in the gender distribution of program completers (Figure 34). The North Central Region has experienced the most significant growth in female program completers, while the Western Region has seen this growth plateau. In 2022, the proportion of female program completers varied widely by state, ranging from 50% to 100% female**.** A detailed breakdown of program completers by state is provided in Appendix O**.**

Figure 34

Program Completer Gender by Region



Note: Non-binary was added to the instrument in 2019.

Objective 4: Describe the Scope of School-Based Agriculture Programs in the United States.

Findings

The tracking of school-based agricultural education (SBAE) programs in the United States dates to 1918, one year after the passage of the Smith-Hughes Vocational Education Act of 1917. According to a 1921 report by the Federal Board of Vocational Education, there were 609 SBAE programs at that time.

Over the years, the number of programs and teachers has grown significantly. Table 24 provides a detailed overview of the total number of programs and teachers reported from 2011 to 2022, highlighting trends in SBAE program expansion and educator workforce development.

Table 24

Total Number of Programs and Teachers

Year	Programs	Teachers	States Reporting
2011	7091	10132	41
2012	7379	10400	45
2013	7073	10112	44
2014	7566	10802	46
2015	8167	11834	50
2016	7775	11558	47
2017	8471	12690	47
2018	9063	13827	50
2019	8504	13190	47
2020	8466	13254	47
2021	8367	13349	40
2022	8987	14516	46

Note1: Discrepancies between years 2015 and 2016 are due to nonresponse/incorrect reporting.
Note2: 2021 had a low response rate.
Note3: In 2023, the NSD team transitioned to an online dataset with increased data quality protocols; as a result, information may not align with previously published data.

Gender of School-Based Agricultural Education Teachers

In response to stakeholder feedback from the National Supply and Demand Project, data collection on the gender of school-based agricultural education teachers began in 2015. To further refine reporting methods, a non-binary gender option was introduced in 2019, alongside male, female, and other categories. Table 25 provides the annual counts and percentages for each gender category. Between 2020 and 2022, female teachers comprised 52% of the reported school-based agricultural education workforce, while male teachers accounted for 48%. Gender

parity was briefly reached between 2019 and 2020, reflecting a shift in the demographic composition of the profession.

Table 25

Gender of school-based agricultural education teachers

Year	2020	2020	2021	2021	2022	2022
Female	6715	51%	6589	52%	6980	53%
Male	6371	49%	6104	48%	6052	46%
Non-Binary	0	0%	4	0%	1	0%
Other	0	0%	0	0%	21	0%
Total	13086	100%	12697	100%	13054	100%

Race of School-Based Agricultural Education Teachers

In 2017, data collection efforts expanded to include information on the racial demographics of school-based agricultural education teachers. Key state contacts, typically members of the state agricultural education staff, were asked to report the racial composition of teachers in their respective states. Between 2020 and 2022, racial diversity among school-based agricultural education teachers experienced a slight decline. Table 26 provides a detailed breakdown of these trends, offering insight into shifts in representation within the profession.

Table 26

Race of School-Based Agricultural Education Teachers

Year	2020	2020	2021	2021	2022	2022
Asian	14	0.1%	32	0.3%	28	0.2%
AA	171	1.4%	211	1.7%	211	1.6%
AI/AN	127	1.0%	141	1.1%	164	1.2%
Multi	47	0.4%	65	0.5%	268	2.0%
Hispanic	447	3.7%	391	3.1%	282	2.1%
Other	5	0.0%	23	0.2%	32	0.2%
Teacher Race NH/PI	4	0.0%	8	0.1%	7	0.1%
White	10679	87.9%	10962	87.3%	11884	89.6%
Unknown	653	5.4%	728	5.8%	394	3.0%
Total	12147	100.0%	12561	100.0%	13270	100.0%

Note: AA=African American, AI/AN= American Indian/Alaska Native, NH/PI= Native Hawaiian/Pacific Islander

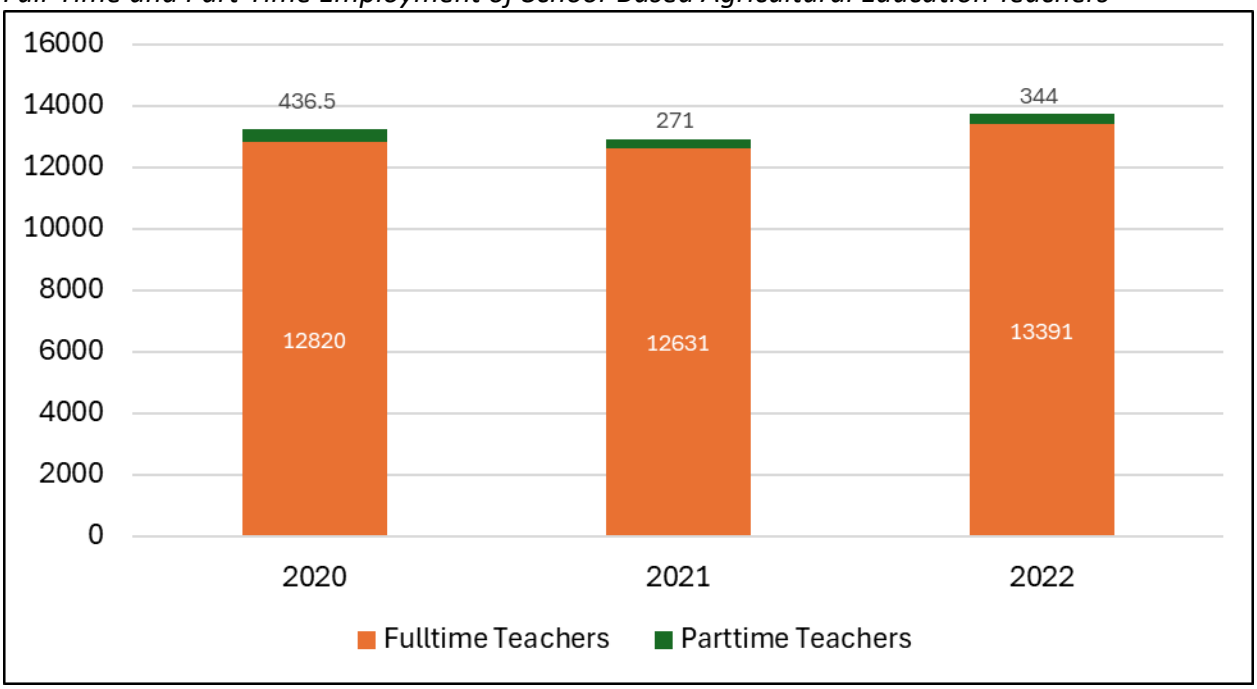
Employment Status of School-Based Agricultural Education Teachers

Consistent with findings from previous studies, the majority of school-based agricultural education teachers are employed in full-time positions. Less than five percent of teachers work

part-time, a trend that has remained relatively stable over time. Figure 35 provides a visual representation of these employment patterns.

Figure 35

Full-Time and Part-Time Employment of School-Based Agricultural Education Teachers



Source of New Hires in School-Based Agricultural Education

Between 2017 and 2019, 14% of all school-based agricultural education teachers in the United States were reported as new hires. Of these, 28% were teachers who had moved from another school. Nationally, an average of 8% of teachers changed schools in 2020 (Taie & Lewis, 2023). Among new hires, 9.3% were either new to the profession or returning teachers. Table 27 provides a breakdown of the sources of new hires, showing that the majority come from in-state program completers at the undergraduate or graduate level, followed by in-state teachers moving to a new school.

Recognizing the growing role of alternative licensure pathways, the AAAE National Supply and Demand research team added an alternative licensure category to the data collection instrument in 2016. This decision followed stakeholder input and an analysis revealing significant variation in how states define non-licensed and alternatively licensed teachers. The proportion of new hires without a traditional teaching license has increased over time, with 14.5% classified as non-licensed in 2014. When the alternative licensure category was introduced in 2016, the combined percentage of non-licensed and alternatively licensed teachers rose to 22.9%. Between 2017 and 2019, approximately 25% of all new hires fell into these categories, highlighting the increasing reliance on alternative pathways to address staffing needs in school-based agricultural education.

Table 27

Source of New Hires in School-Based Agricultural Education (SBAE)

Year	2020		2021		2022	
States	41		36		40	
Total Teachers	10192		12429		11482	
Moved*	366	31%	350	21%	613	32%
UG in State	372	44%	506	38%	436	34%
UG out State	80	9%	80	6%	82	6%
Grad in State	116	14%	149	11%	139	11%
Grad Out of State	15	2%	16	1%	19	1%
Alternative Licensed	193	23%	304	23%	337	26%
Non-Licensed	75	9%	76	6%	193	15%
Other	21	2%	33	3%	35	3%
Unknown	23	3%	152	12%	52	4%
Total	1195		1666		1906	
Total Net	843	100%	1316	100%	1293	100%
Percent Net	8%		11%		11%	

Note 1. *Percent is of all new hires. Other percentages use Total Net.
Note 2: Total Net excludes teachers that moved.
Note 3: Precent Net = Total Net / Total Teachers

Between 2020 and 2022, non-licensed hires accounted for an average of 10% of all new hires in school-based agricultural education. Within this group, the most common sources were individuals coming from industry, teachers holding certifications in other subject areas, and graduates of agricultural-related degree programs (Table 28). These trends highlight the diverse pathways individuals take to enter the profession and the increasing reliance on non-traditional routes to fill available teaching positions.

Table 28

Sources of Unlicensed Hires

Source	2020	2021	2022	Average
Agribusiness/Industry	23%	25%	32%	27%
Other Certification Than Ag	31%	8%	35%	24%
Agriculture Graduate	31%	18%	19%	23%
Unknown	9%	36%	7%	17%
Education Graduate	1%	4%	2%	3%
Other	3%	7%	1%	3%
Other Graduate	1%	3%	1%	2%
Retired	1%	0%	2%	1%

Table 29 provides a direct comparison between all sources of new hires and the number of program completers from university agricultural teacher preparation programs. Between 2020 and 2022, 58% of new hires each year came from these traditional preparation programs, an increase from 54% in the 2017-2019 period. On average, the school-based agricultural education workforce experiences an annual replacement rate of 7.9%, reflecting the ongoing need for new teachers to sustain and grow the profession.

Table 29

Sources of New Hires in School-Based Agricultural Education by Preparation Pathway (Excluding Teacher Transfers), 2020–2022

Year	2020		2021		2022	
States	41		36		40	
Program Completers	583	69%	751	57%	676	52%
Other Source	312	37%	565	43%	617	48%
Total Net	843	100%	1316	100%	1293	100%

Note: Total does not include teachers that moved.

New Positions and Lost Positions in School-Based Agricultural Education

Table 30 provides an overview of new, lost, and net changes in teaching positions. The data indicate a small but steady increase in the number of positions, with the most significant growth occurring in the North Central and Western regions. Nationally, the number of teaching positions grew by an average of 1.8% per year between 2020 and 2022. A comparison over time shows that in 2011, there were 1.4 teachers per program, increasing to 1.6 teachers per program by 2022. This steady expansion in program size continues to drive demand for qualified agricultural education teachers, reinforcing the need for sustained efforts to attract and retain educators in the field.

Table 30

Number of New and Lost Positions in School-Based Agricultural Education

Year	AAAE Region	Total Positions	Positions Lost Total	New Positions	Net Positions	Position Growth
2020	North Central	4398	29	128	81	1.8%
	Southern	5572	25	57	30	0.5%
	Western	1844	19	57	35	1.9%
	Total	11814	73	242	146	1.2%
2021	North Central	4093	20	154	117	2.9%
	Southern	5826	16	134	99	1.7%
	Western	1774	10	89	69	3.9%
	Total	11693	46	377	285	2.4%
2022	North Central	4839	19	213	96	2.0%
	Southern	4020	35	108	55	1.4%
	Western	2631	35	104	43	1.6%
	Total	11490	89	425	194	1.7%

Note: Total positions only include states reporting new and lost positions.

State agricultural education staff were asked to report the reasons for the loss of school-based agricultural education positions. Since not all states provided this information, the findings cannot be generalized to the entire country. During the reporting period, no single cause stood out as the primary reason for lost positions. However, on average, the most frequently cited factors were the inability to find a qualified teacher and reasons categorized as "other." Table 31 provides a detailed breakdown of the reported reasons for the loss of school-based agricultural education positions.

Table 31

Reasons for Lost Positions in School-Based Agricultural Education

Year	2020		2021		2022	
States Reporting	31		28		24	
Total Programs	6358		5564		4893	
Total Teachers	9288		8501		7680	
No Teachers	13	17%	15	25%	39	40%
Enrollment	16	21%	4.5	8%	31	32%
Funding	6	8%	6	10%	5	5%
Other	30	39%	20	33%	13.5	14%
Unknown	12	16%	14	23%	5	5%
Total	77	100%	60	100%	97	100%

Note: This metric is commonly not reported by states, so totals are not an indicator of all states.

Vacancies account for less than 0.8% of total school-based agricultural education positions (Table 32). This reflects a slight increase from the 2017-2019 period, when vacancies made up 0.6% of positions. However, fewer states reported vacancy data in the most recent period, which may impact direct comparisons. Part-time positions continue to represent only a small fraction of total vacancies, indicating that most openings remain for full-time teaching roles.

Table 32

Number of Vacant Full-Time and Part-Time Positions in School-Based Agricultural Education

Year	2017	2018	2019	Total	%
States Reporting	47	50	47	144	
Vacant Full-time	72	61	60	193	92%
Vacant Part-time	4	10	3	17	8%
Total	76	71	63	210	100%

Teachers Leaving

Between 2020 and 2022, a total of 2,268 school-based agricultural education teachers left the profession, an increase from the 2,196 reported during the 2017-2019 period. Table 33 provides a breakdown of the reported reasons for leaving the classroom. Consistent with previous findings, retirement and transitions to agribusiness remain the most common reasons for leaving the profession. However, a notable shift has occurred, with an increasing number of teachers leaving to teach another subject, making it the third most frequently reported reason for departure.

Table 33

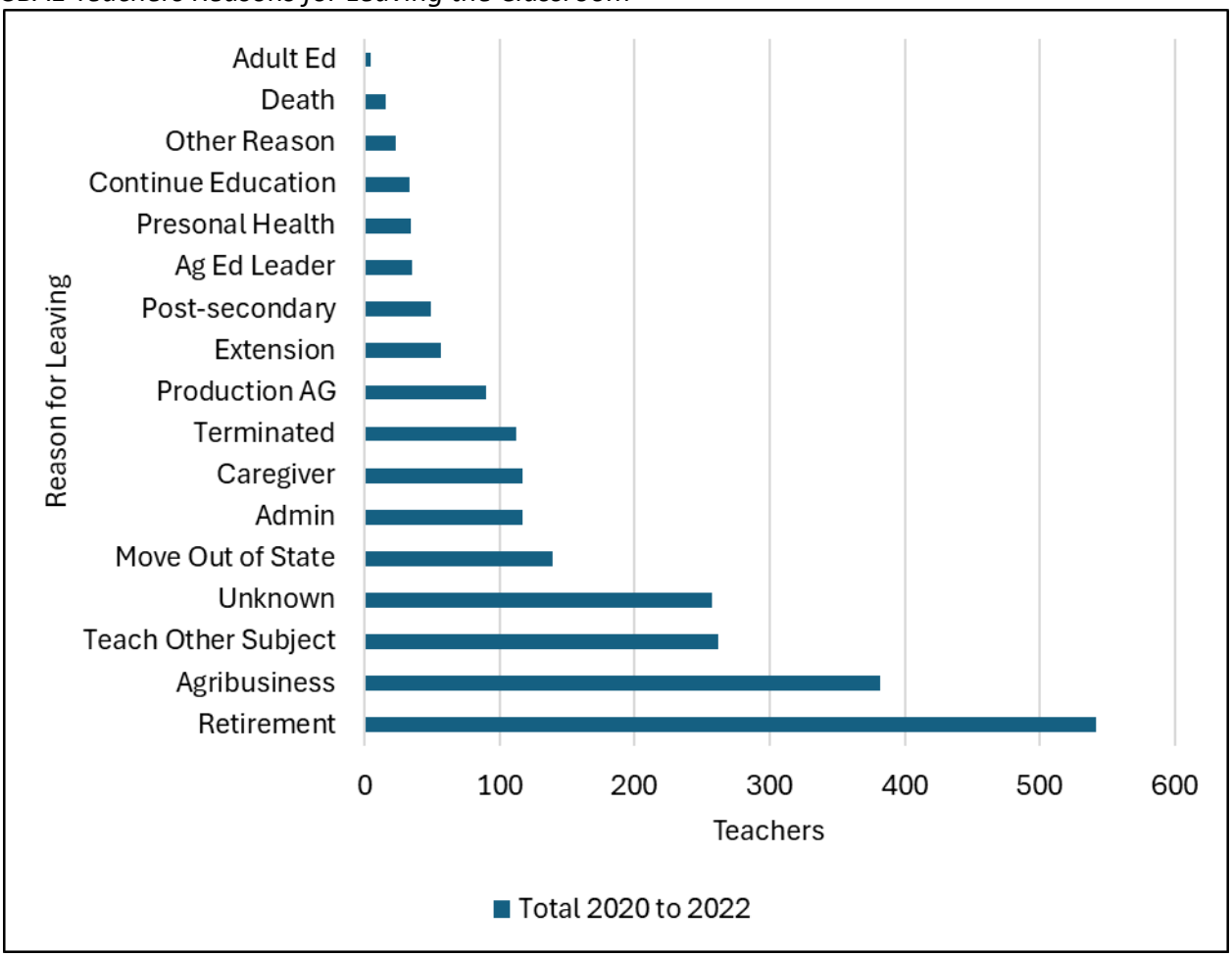
Number of School-Based Agricultural Education Teachers Leaving the Classroom

Year	2020		2021		2022		Total	
States	40		40		43			
Retirement	165	25%	198	28%	179	20%	542	24%
Agribusiness	105	16%	120	17%	157	17%	382	17%
Teach Other Subject	57	9%	76	11%	129	14%	262	12%
Unknown	106	16%	66	9%	85	9%	257	11%
Move Out of State	37	6%	40	6%	62	7%	139	6%
Admin	33	5%	43	6%	41	5%	117	5%
Caregiver	22	3%	33	5%	62	7%	117	5%
Terminated	45	7%	30	4%	37	4%	112	5%
Production AG	18	3%	31	4%	41	5%	90	4%
Extension	22	3%	6	1%	28	3%	56	2%
Post-secondary	15	2%	12	2%	22	2%	49	2%
Ag Ed Leader	8	1%	9	1%	18	2%	35	2%
Personal Health	12	2%	12	2%	10	1%	34	1%
Continue Education	8	1%	10	1%	15	2%	33	1%
Other Reason	6	1%	8	1%	9	1%	23	1%
Death	2	0%	9	1%	5	1%	16	1%
Adult Ed	2	0%	1	0%	1	0%	4	0%
Total	663	100%	704	100%	901	100%	2268	100%

The national attrition rate for school-based agricultural education teachers was estimated using interpolated data. This rate includes teachers who moved out of state—averaging 6% of those leaving between 2020 and 2022. Since some may have continued teaching elsewhere, the true number permanently exiting the profession may be slightly lower than reported (Figure 36).

Figure 36

SBAE Teachers Reasons for Leaving the Classroom



The interpolated national attrition rate for school-based agricultural education (SBAE) teachers averaged 6.5% between 2014 and 2022, with annual rates ranging from a low of 5.7% in 2017 to a high of 7.7% in 2015 (Table 34). While some fluctuation is expected year to year, the data suggests a relatively stable yet persistent trend of teacher turnover within the profession.

Table 34

Interpolated National Attrition Rate for SBAE Teachers

Year	Teachers	Teachers Leaving	Attrition Rate
2014	11766	837	
2015	12053	902	7.7%
2016	12609.5	741	6.1%
2017	12991	719	5.7%
2018	13571	908	7.0%
2019	13817.5	792.8	5.8%
2020	14097.5	854	6.2%
2021	14416	868	6.2%
2022	14873	1016	7.0%
Average			6.5%

Given that one of the top reasons for leaving the classroom is a transition to agribusiness or industry, an examination of teacher compensation was conducted. Respondents were asked to report average salaries and contract lengths; however, many state staff indicated limited access to reliable salary data. As a result, the information presented in Table 35 should be interpreted with caution.

Despite these limitations, the data indicate that average salaries for agricultural education teachers increased by 6% over the three-year reporting period. Additionally, most agricultural educators are employed on extended contracts, averaging 29 days beyond the standard 180-day school year. This reflects the additional responsibilities often required in agricultural education, such as managing supervised agricultural experiences (SAEs), advising FFA chapters, and coordinating community-based learning opportunities.

Table 35

Average Salary and Contract Length

Year	AAAE Region	States Reporting	States Reporting Salary	Average Salary	States Reporting Contract	Average Contract (days)
2020	North Central	22	14	42575	18	201
	Southern	12	9	40892	11	208
	Western	13	7	43503	11	202
	Total	47	30	42287	40	203
2021	North Central	18	11	45239	15	201
	Southern	13	9	44290	11	219
	Western	10	7	37930	6	205
	Total	41	27	43028	32	208
2022	North Central	20	14	44145	17	200
	Southern	14	8	44592	13	208
	Western	12	7	46672	9	206
	Total	46	29	44878	39	204

Note: A small number of states report these data.

New and Lost Programs in School-Based Agricultural Education

The addition of new programs continues to drive increased demand for agricultural education teachers (Table 36). Between 2020 and 2022, the national average program growth rate was 1.38%, with regional averages following a similar pattern. A notable slowdown in growth occurred in 2020, likely due to disruptions caused by the COVID-19 pandemic.

From 2017 to 2019, 210 school-based agricultural education positions were lost, and 115 programs closed. The reasons for program or position closures varied, often driven by local decisions related to shifts in career and technical education priorities, changes in student

interest, political pressures, and community support. Table 36 outlines these losses by year and region.

Trends in program growth and loss varied across regions. Between 2017 and 2019, the Southern region consistently reported the highest number of total positions and programs but also experienced the largest losses. In contrast, the Western region had the fewest total positions and programs but recorded a relatively high percentage of losses compared to its size. Beginning in 2020, program growth became more apparent across all regions, with new programs outpacing closures.

In 2021, the Western region had the highest program growth rate at 2.2%, despite its smaller overall size compared to the North Central and Southern regions. Nationally, program growth peaked in 2021 at 1.7%, reflecting ongoing efforts to expand agricultural education. While losses were a concern in earlier years, the later period showed a positive net increase in programs, suggesting a phase of recovery and expansion.

Table 36

New and Lost Programs in School-Based Agricultural Education

Year	AAAE Region	Total Programs	Programs Lost	New Programs	Net Programs	Program Growth
2020	North Central	3250	20	60	33	1.0%
	Southern	3308	19	50	27	0.8%
	Western	962	7	24	10	1.0%
	Total	7520	46	134	70	0.9%
2021	North Central	2897	6	68	45	1.6%
	Southern	3363	11	71	55	1.6%
	Western	924	3	27	20	2.2%
	Total	7184	20	166	120	1.7%
2022	North Central	3395	5	108	57	1.7%
	Southern	2718	24	74	46	1.7%
	Western	1408	10	30	13	0.9%
	Total	7521	39	212	116	1.5%

Note: Total programs only include states reporting new and lost programs.

Vacancies

Although vacancies are not included as part of the demand metric, they serve as an important indicator of unmet need. Figure 37 illustrates the trend of increasing vacancies in comparison to the number of teachers leaving the profession, providing insight into workforce challenges in school-based agricultural education.

Figure 37

Fulltime Vacant Positions Compared to Teachers Leaving

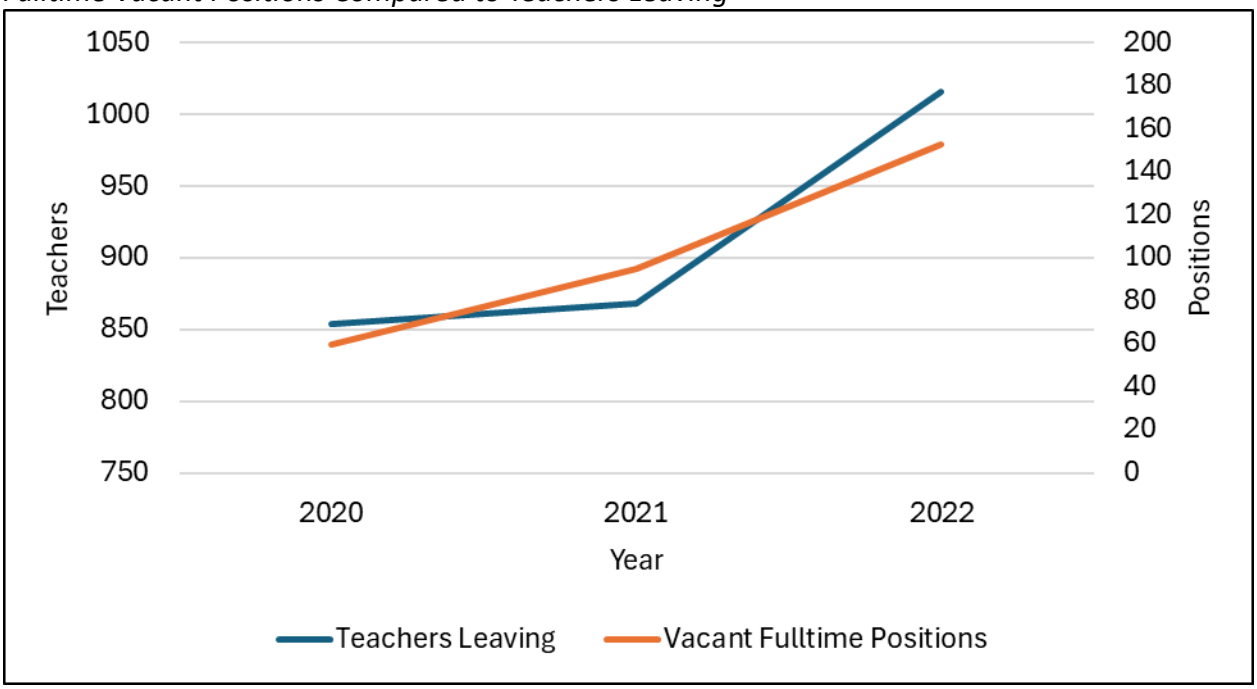


Table 37 compares the number of out-of-state hires reported by states with the number of program completers reported by teacher education institutions as accepting SBAE teaching positions in other states. A negative value indicates that a state is a net exporter of teachers. This metric can only be calculated when both supply and demand data are available for a given year.

According to the data, a total of 287 teachers were reported as out-of-state hires (Table 27), while 169 program completers were reported to have accepted teaching positions in another state (Table 20). This represents a 9% discrepancy between the two figures. It is important to note that not all states report both supply and demand data each year, and the figures originate from separate data sources. Despite these limitations, this comparison provides a useful indication of teacher mobility across state lines.

Table 37

Net Import

State	2020	2021	2022
Alabama	-3		
Alaska			
Arizona	3		0
Arkansas		-2	6
California	3	1	2
Colorado	3	6	7
Connecticut	-5	0	0
Delaware	0	2	2
Florida	0	4	0
Georgia	-1	-1	0
Idaho	-3		
Illinois	3	4	4
Indiana	7	4	2
Iowa	6	2	1
Kansas	-2	0	-6
Kentucky	0	-2	-7
Louisiana		0	1
Maryland	3	3	2
Michigan	1	1	0
Minnesota	12	7	14
Mississippi	-2	-1	-2
Missouri	-3	-3	3
Montana	0		0
Nebraska	5	3	6
Nevada	0		
New Jersey		1	2
New Mexico	-1	0	0
New York	8	5	6
North Carolina	-1	-3	3
North Dakota	0	0	1
Ohio	-2	0	1
Oklahoma	0	-3	-1
Oregon	0	0	2
Pennsylvania	1	-6	-1
Puerto Rico			
South Carolina	2	2	2
South Dakota	-9		
Tennessee	-1	2	4
Texas		20	
Utah	-4	-5	-1
Virginia	12	4	3
Washington			-2
West Virginia			-2
Wisconsin	-3		-8
Wyoming			0

Other Common Metrics

The education profession uses several common metrics to describe teacher movement (Bailey et al., 2021). These are useful when comparing SBAE to other scholarship efforts around teacher supply and demand. These metrics are reported in Table 38. Note that data must be available for the current and prior year to compute the metric.

Mobility Rate = teachers moving / number of teachers in the prior year
Retention Rate = (number of teachers in the prior year –teachers leaving) / number of teachers in prior year
Retention Rate = 1 – attrition rate
Attrition Rate = teachers leaving / number of teachers prior year
Replacement Rate = demand for new teachers/total teachers in the previous year.

Table 38

Common Metrics

State	Year	Attrition	Mobility	Retention	Replacement Rate
Alabama	2020	9%	1%	91%	9%
Alaska	2020	0%	0%	100%	
Arizona	2020	17%	4%	83%	16%
Arizona	2021	11%		89%	
Arkansas	2022	2%	5%	98%	2%
California	2020	7%	6%	93%	9%
California	2021	4%	3%	96%	9%
California	2022	8%	10%	92%	13%
Colorado	2020	8%	3%	92%	13%
Colorado	2021	1%	1%	99%	10%
Colorado	2022	2%	0%	98%	1%
Connecticut	2020	4%	2%	96%	
Connecticut	2021	3%	4%	97%	7%
Connecticut	2022	7%	0%	93%	
Delaware	2020	7%	10%	93%	
Delaware	2021	7%	0%	93%	
Delaware	2022	11%	7%	89%	
Florida	2020	1%	0%	99%	1%
Florida	2021	6%	2%	94%	5%
Florida	2022	6%	4%	94%	7%
Georgia	2021	7%	5%	93%	12%
Georgia	2022	13%	10%	87%	14%
Hawaii	2020	0%	0%	100%	
Idaho	2020	0%	0%	100%	
Illinois	2020	7%	3%	93%	10%
Illinois	2021	8%	5%	92%	15%
Illinois	2022	10%	8%	90%	19%
Indiana	2020	9%	5%	91%	14%
Indiana	2021	9%	8%	91%	13%
Indiana	2022	11%	8%	89%	15%
Iowa	2020	10%	8%	90%	13%
Iowa	2021	14%	7%	86%	15%
Iowa	2022	15%	14%	85%	17%
Kansas	2020	8%	6%	92%	10%
Kansas	2021	7%	4%	93%	10%
Kansas	2022	12%	5%	88%	16%
Kentucky	2020	8%	4%	92%	9%
Kentucky	2021	6%	5%	94%	11%
Kentucky	2022	10%	5%	90%	13%

State	Year	Attrition	Mobility	Retention	Replacement Rate
Louisiana	2022	3%	1%	97%	5%
Maine	2020	1%	0%	99%	
Maryland	2020	9%	3%	91%	14%
Maryland	2021	8%	0%	92%	10%
Maryland	2022	9%	3%	91%	8%
Massachusetts	2020		0%		
Michigan	2020	7%	2%	93%	9%
Michigan	2021	4%	1%	96%	
Michigan	2022	9%	4%	91%	10%
Minnesota	2020	8%	9%	92%	13%
Minnesota	2021	3%	7%	97%	13%
Minnesota	2022	10%	9%	90%	18%
Mississippi	2020	11%	1%	89%	11%
Mississippi	2021	13%	5%	87%	12%
Mississippi	2022	12%	5%	88%	11%
Missouri	2020	6%	5%	94%	7%
Missouri	2021	9%	5%	91%	10%
Missouri	2022	12%	5%	88%	
Montana	2020	4%	0%	96%	4%
Montana	2021	3%	3%	97%	
Montana	2022	6%	5%	94%	
Nebraska	2020	8%	10%	92%	
Nebraska	2021	11%	7%	89%	11%
Nebraska	2022	14%	7%	86%	
Nevada	2020	13%	0%	87%	
Nevada	2021	15%	10%	85%	
Nevada	2022	15%	3%	85%	15%
New Hampshire	2020	12%	0%	88%	
New Jersey	2020	3%	2%	97%	3%
New Jersey	2021	8%	0%	92%	6%
New Jersey	2022	10%	3%	90%	
New Mexico	2020	3%	1%	97%	
New Mexico	2021	7%	0%	93%	
New Mexico	2022	6%	0%	94%	
New York	2020	1%	3%	99%	3%
New York	2021	2%	2%	98%	
New York	2022	4%	4%	96%	
North Carolina	2020	8%	3%	92%	8%
North Carolina	2021	8%	4%	92%	14%
North Carolina	2022	14%	9%	86%	17%
North Dakota	2020	5%	2%	95%	7%

State	Year	Attrition	Mobility	Retention	Replacement Rate
North Dakota	2021	10%	4%	90%	13%
North Dakota	2022	11%	0%	89%	
Ohio	2020	4%	0%	96%	5%
Ohio	2021	4%	0%	96%	6%
Ohio	2022	1%	0%	99%	
Oklahoma	2020	9%	6%	91%	9%
Oklahoma	2021	11%	3%	89%	
Oklahoma	2022	7%	8%	93%	
Oregon	2020	6%	2%	94%	10%
Oregon	2021	6%	3%	94%	12%
Oregon	2022	8%	6%	92%	
Pennsylvania	2020	3%	1%	97%	
Pennsylvania	2021	4%	1%	96%	
Pennsylvania	2022	11%	4%	89%	
South Carolina	2020	5%	5%	95%	5%
South Carolina	2021	6%	2%	94%	7%
South Carolina	2022	4%	2%	96%	
South Dakota	2020	15%	6%	85%	17%
South Dakota	2021	3%		97%	
Tennessee	2020	6%	4%	94%	5%
Tennessee	2021	5%	2%	95%	6%
Tennessee	2022	5%	3%	95%	8%
Texas	2020	0%	0%	100%	1%
Texas	2021	0%	0%	100%	1%
Texas	2022	0%	0%	100%	0%
Utah	2020	7%	4%	93%	9%
Utah	2021	6%	3%	94%	9%
Utah	2022	3%	7%	97%	6%
Virgin Islands	2021	60%	20%	40%	20%
Virgin Islands	2022	60%	0%	40%	0%
Virginia	2020	11%	4%	89%	
Virginia	2021	3%	1%	97%	
Virginia	2022	3%	1%	97%	3%
Washington	2020	0%	0%	100%	0%
Washington	2021	2%	0%	98%	1%
Washington	2022	3%	0%	97%	0%
Wisconsin	2020	5%	2%	95%	6%
Wisconsin	2021	10%	0%	90%	
Wisconsin	2022	7%	6%	93%	
Wyoming	2020	14%	14%	86%	
Wyoming	2021	12%	5%	88%	
Wyoming	2022	8%	8%	92%	

Note: The table shows only reported data. Where a metric is missing, data was not provided by the state.

Conclusions, Discussion, and Implications

Between 2014 and 2022, the number of school-based agricultural education (SBAE) teachers increased by 26%. During the same period, the number of program completers rose by 17%. However, despite this growth, the percentage of completers entering teaching positions has declined (Table 27), indicating that the supply of newly trained graduates is not keeping pace with rising demand.

An increasing share of new hires now come from non-traditional preparation pathways. While the long-term implications of this shift on instructional quality remain uncertain, it underscores the importance of targeted professional development. Teacher preparation programs and professional organizations must ensure that alternatively certified teachers receive the support needed to succeed in the classroom.

The number of reported vacant positions has decreased over the same timeframe. This may reflect progress in teacher retention and improvements in data collection practices. Revisions to the data collection instrument, along with stronger partnerships with the National FFA Organization, the National Association of Agricultural Educators (NAAE), and the National Teach Ag Campaign, likely contributed to more accurate reporting.

To maintain a sustainable teacher pipeline, continued investment in long-term, strategic efforts is essential. These efforts should include robust support for the National Teach Ag Campaign and targeted recruitment initiatives led by in-service teachers and teacher educators.

Growing Positions and Programs

Nationwide, FFA continues to experience increases in membership (National FFA Organization, 2024). This rise in student enrollment is typically managed either by expanding class sizes or by hiring additional teachers. Between 2014 and 2022, new teaching positions grew at an average annual rate of 2.2%. However, attrition and position losses partially offset this growth, resulting in a net annual increase of 1.8%. Among regions, the Western region reported the highest net growth in teacher positions at 2.4%, while the Southern region reported the lowest at 1.5%.

Program growth also contributed to increased teacher demand. Regional program growth rates ranged from 1.6% to 2.0%, with net program growth falling between 1.2% and 1.5%. The North Central region led in net program growth at 1.8%, while the Western region recorded the lowest at 0.7%. Because each new program typically requires at least one teacher, continued program expansion remains a key driver of teacher demand.

The average number of teachers per program rose from 1.48 in 2017 to 1.61 in 2022, suggesting that growth is not limited to new programs but also includes staffing increases

within existing programs. Imputed data (Table 39) reflect consistent increases in both teacher counts and program numbers, while Tables 30 and 36 display the reported values.

Table 39

Total Programs and Teachers Using Imputed Data

Year	Programs	Program Growth	Teachers	Teacher Growth
2014	8155		11766	
2015	8296	2%	12053	2%
2016	8454	2%	12610	5%
2017	8681	3%	12991	3%
2018	8844	2%	13571	4%
2019	8966	1%	13818	2%
2020	9091	1%	14098	2%
2021	9146	1%	14416	2%
2022	9294	2%	14873	3%

The National FFA Organization (2024) reports membership exceeding 1,000,000, reflecting growth of more than 8% from the previous year. Similar trends were documented by Sheehan and Moore (2019) for the period from 2013 to 2016. While not all school-based agricultural education (SBAE) students are FFA members, the ongoing increase in membership closely mirrors the overall rise in SBAE student enrollment.

In contrast, the number of SBAE teachers has been growing at a more modest rate of approximately 2–3% in recent years (Table 39 [imputed]). This disparity between student and teacher growth raises sustainability concerns. When student numbers increase more rapidly than the teaching workforce, class sizes inevitably grow. This is particularly problematic in the context of the three-circle model of SBAE (Croom, 2008), which places strong emphasis on hands-on, experiential learning—an approach that is most effective in smaller class settings.

Gender and Race

There has been a clear shift in the gender composition of SBAE teachers. Historically, the profession was predominantly male. Nationally, women now represent 64% of the secondary teaching workforce (National Center for Education Statistics, 2023), and SBAE is following a similar trend. The rapid increase in female program completers has accelerated this shift. However, the gender makeup of teachers entering the profession through alternative certification remains less clear. National data show that 32% of male teachers hold alternative certifications, compared to 22% of female teachers (National Center for Education Statistics, 2022). This trend may be contributing to a more balanced gender representation among alternatively certified SBAE teachers, potentially offsetting the high proportion of female program completers.

The literature on gender and teacher attrition is mixed. Marso and Pigge (1997) reported that male teachers had higher attrition rates, while Adams (1996) found that female teachers were 37% more likely to leave the profession than their male counterparts. This has led to concerns that increasing the number of female teachers could lead to higher attrition and deepen the teacher shortage. However, between 2014 and 2022, the percentage of female SBAE teachers increased from 64% to 75%, with no corresponding increase in attrition rates. The percentage of teachers citing childcare responsibilities as a reason for leaving the profession has remained steady, ranging from 6% to 8%. These findings suggest that teacher gender may not be a major driver of attrition.

SBAE teachers have also historically been predominantly white and male. While current program completers remain overwhelmingly white, this has not kept pace with the growing racial diversity of SBAE students, particularly in regions like the West where Hispanic enrollment has increased substantially. Nationally, 83% of traditionally prepared teachers are white, compared to only 63% of those entering through alternative routes (National Center for Education Statistics, 2022). If SBAE reflects this national trend, increased hiring of alternatively certified teachers may be helping to diversify the workforce.

There is an ongoing conversation about whether teachers should reflect the demographics of their students. Luft (1996) found that most teachers in Nevada, who were predominantly white, did not incorporate culturally responsive teaching practices. While being a teacher of color does not guarantee inclusive pedagogy, it can bring valuable perspectives to the classroom. According to the National FFA Organization (2024), FFA membership is 48% male and 58% white. In both gender and race, there is a pressing need to recruit more male teachers and teachers of color.

While the gender shift appears to be leveling off, program completers continue to be predominantly female. This may be due to higher attrition among younger teachers or the fact that alternatively licensed teachers are more likely to be male. Regardless, understanding and addressing these dynamics is essential to building a diverse and sustainable SBAE teacher workforce.

Sources of New Hires

Nationally, 18% of new K–12 hires enter the profession through alternative certification pathways (National Center for Education Statistics, 2022). In SBAE, the number of teachers entering through alternative routes continues to grow. Over the past 6 years, the number of non-licensed hires has more than doubled, now making up 10% of all new hires.

Roughly 25% of these non-licensed teachers come from other subject areas. It can be assumed that their professional development needs are likely centered around agricultural content knowledge and non-classroom responsibilities. Approximately 50% come directly from industry or are agriculture graduates, which suggests that they may require greater support in pedagogy and classroom management. What remains unclear is the long-term trajectory of

these individuals—whether they eventually pursue traditional or alternative licensure, and how they progress in the profession over time.

Program completers have accounted for slightly more than half of all new hires during this period. This raises important questions. Given the effort institutions invest in preparing teacher candidates, should it be a concern that they supply only about 50% of the new workforce? This study provides limited insight into the backgrounds and outcomes of non-traditional entrants. Do they have SBAE experience? How successful are they in the classroom? How does their retention compare to that of traditionally trained teachers? Are their professional development needs different? As unmet demand persists, schools are increasingly turning to non-traditional hires to fill open positions. Until universities can graduate enough program completers to meet demand, the proportion of alternatively certified teachers is likely to continue rising.

Teacher attrition remains a significant factor in overall demand. Each year, an estimated 5–7% of SBAE teachers leave the profession. Retirements—largely predictable—account for about 25% of this turnover and represent the largest single cause of teacher exit. These departures are unlikely to change substantially. However, when including those who leave for careers in agribusiness or production agriculture, an additional 20% of attrition is observed. This segment may represent an opportunity for improved retention.

Termination is the third most common reason teachers leave the profession. This is concerning, as termination is generally more difficult for tenured educators and is therefore likely to be concentrated among new teachers. The “revolving door” effect of early-career attrition is troubling, especially given that new teachers are still developing their instructional practice and are generally less effective than experienced educators. Addressing this issue is critical to improving workforce stability and instructional quality in SBAE programs.

Alternative Certification, Teacher Effectiveness, and Attrition

Concerns surrounding non-traditionally trained teachers often center on their effectiveness and attrition. Research comparing the performance of alternatively certified and traditionally certified teachers has yielded mixed findings. A recent study by Lucksnat et al. (2024) examining mathematics teachers found no significant differences in teaching quality between the two groups. However, principals surveyed by Nusbaum (2002) perceived traditionally certified teachers to be stronger in areas such as content knowledge, instructional planning, and classroom management.

The highly variable nature of alternative certification pathways makes it difficult to draw definitive conclusions. In Wisconsin, Claflin et al. (2020) found no significant difference in turnover intentions between traditionally and alternatively certified agriculture teachers. Nationally, 37% of Career and Technical Education (CTE) teachers enter the profession through alternative certification (National Center for Education Statistics, 2022), suggesting that the scale of this segment is not unique to SBAE. Furthermore, an analysis of attrition data from

2014–2022 shows no significant correlation between teacher attrition rates and the increase in nontraditional hires.

While alternatively certified teachers often bring valuable real-world experience and diverse professional backgrounds, they may lack formal training in pedagogy compared to their traditionally trained peers (Bowling & Ball, 2018; Claflin et al., 2020). As the number of alternatively certified SBAE teachers continues to rise, it is increasingly important to identify and meet their specific professional development needs to support both teacher success and long-term retention (Coleman et al., 2020; Stair et al., 2019).

The three-circle model of SBAE instruction—which integrates classroom/laboratory instruction, FFA, and supervised agricultural experiences—has been shown to be highly effective (Yoest & Kane, 2015; Croom, 2008) but may be unfamiliar to alternatively certified teachers. Both Coleman et al. (2020) and Stair et al. (2019) recommend that professional development opportunities for these educators be tailored to focus on pedagogy, curriculum development, and classroom management, ensuring they are equipped to succeed within the unique structure of SBAE programs.

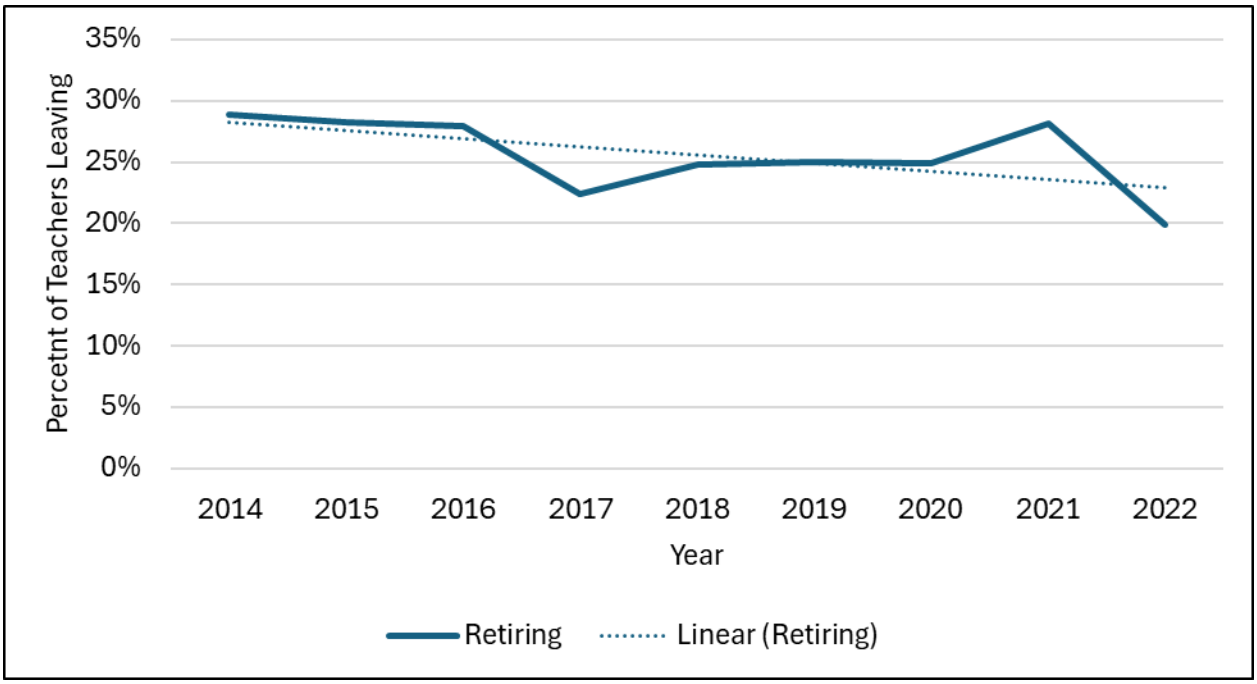
Retirements and Workforce Age

Retirements (Figure 38) continue to be the leading reason SBAE teachers leave the profession. While there was a noticeable spike in 2021—likely influenced by the COVID-19 pandemic—the overall trend in retirements has been declining. This may indicate a shift toward a younger teacher workforce.

Supporting this observation, Ingersoll et al. (2021), using data from the National Center for Education Statistics, found that the percentage of K–12 teachers over age 50 is decreasing nationally. If this trend continues, it may contribute to lower attrition rates in the future.

Figure 38

Retirement Trend



Teacher Attrition and Retention

Calculating a national attrition rate is challenging due to inconsistent reporting across states and years. While current-year data can offer an estimate, it often underrepresents the true rate because of the ongoing increase in the total number of teachers. To adjust for gaps, an average attrition rate has been calculated using interpolated data. The attrition rate for SBAE teachers during 2020–2022 was 6.5% (Table 34 [imputed]). By comparison, the national attrition rate for all public school teachers during the 2020–2021 school year was 7.9% (Taie & Lewis, 2023). This suggests that SBAE teachers may be retained at slightly higher rates than their K–12 peers, though improving retention remains a key strategy for addressing overall teacher demand.

The impact of changing SBAE teacher demographics on attrition is not yet fully understood. Nationally, public school teacher retention has remained steady at 92% (National Center for Education Statistics, 2024c), while SBAE teacher retention averaged 93.5% during the same period (based on imputed data). Despite state-by-state variation, this indicates a marginally stronger retention rate within SBAE.

Still, the “revolving door” of new teachers is a concern. Although this study does not collect data on years of experience, an annual replacement rate of 6.5% suggests a substantial share of the workforce is composed of early-career teachers. Research shows that newer teachers are more likely to leave than experienced educators (Brill & McCartney, 2008), reinforcing the likelihood that a significant portion of the SBAE workforce is relatively new. For

example, in California, nearly 38% of SBAE teachers have 5 or fewer years of experience (Matt Patton, Executive Director of the California Agricultural Teachers' Association, personal communication, 11/25/2024). In Utah, that number is as high as 60% (Amy Fullmer, USBE State Specialist, personal communication, 4/18/2025).

Research on teacher attrition highlights a complex interplay of factors. Gender differences are evident; men are less likely to leave the field entirely but more likely to shift roles within education (Quartz et al., 2008). Secondary teachers, especially those with single-subject credentials, exhibit higher attrition rates than elementary teachers (Quartz et al., 2008; Falch, 2022). Within SBAE, female teachers face unique challenges, including gender bias, administrative barriers, and difficulties balancing work and family life (Kelsey, 2006; Hainline et al., 2015). Other drivers of attrition include burnout, family obligations, and retirement (Tippens et al., 2013).

Additional influences include teacher characteristics, school working conditions, and external policy pressures (Hancock & Scherff, 2010; Sass et al., 2011). Teachers of color and those with greater experience tend to have lower attrition risk (Hancock & Scherff, 2010). Conversely, environments shaped by high-stakes testing, underperformance ratings, and charter school governance are linked with higher attrition (Sass et al., 2012). Differences in attrition are also observed between teacher education pathways, with academically higher-performing graduates more likely to leave the profession (Falch, 2022). Attrition tends to be a gradual process, increasing with time post-graduation (Falch, 2022).

Recommendations for Research and Practice

A comprehensive review of the national SBAE supply and demand model (see Figure 1) indicates persistent teacher shortages despite improved program completer yields. To address this, stakeholders must focus on areas where meaningful change is possible. These include strengthening teacher retention, expanding the supply of new teachers, diversifying the workforce, re-engaging former educators, and aligning recruitment and placement strategies with workforce needs.

Strengthen Retention Strategies

Retention is one of the most immediate and controllable strategies for addressing the teacher shortage. Although SBAE teacher retention rates are slightly better than the national average, they have shown little change over time. High turnover results in significant financial and educational costs and can lead to program instability.

Attrition is especially high among early-career teachers. Research indicates that retaining teachers for even one additional year can substantially reduce turnover. Providing targeted support through high-quality induction programs, structured mentoring, and SBAE-specific professional development is essential. These efforts should be collaborative and involve teacher preparation programs, state education agencies, and professional associations.

Special attention is needed for alternatively certified teachers, who often enter the field with strong industry experience but limited training in instructional strategies and classroom management. Establishing peer-based professional learning communities can help address this gap by fostering collaboration and shared learning between traditionally and alternatively certified teachers.

Expand the Supply of New Teachers

Although program completer numbers are rising—and yield surpassed 77% in 2022—supply of new teachers still falls short of meeting increasing demand. One long-term solution for addressing this gap is to expand SBAE teacher preparation capacity.

Currently, only about one-third of colleges of agriculture offer teacher licensure programs. Stakeholders should identify potential institutions—particularly in underserved areas—and provide support to launch new programs. However, expansion must be paired with a renewed investment in faculty capacity. The profession has seen a decline in full-time, tenure-track faculty, limiting scalability. To reverse this trend, increased support for tenure-track hires, clinical faculty, and graduate teaching assistants is essential.

National organizations such as AAAE, NAAE, NASAE, and the National FFA should collaborate to set measurable goals for program completer production and align efforts to grow the teacher pipeline. Ongoing evaluation of initiatives like the State Teach Ag Results (STAR) campaign can identify effective strategies for recruitment and, perhaps, improve program yield.

In a study of secondary teachers in Montana and Wyoming, Cotton (2005) found no clear correlation students' exposure to career instruction and their decision to pursue agricultural education as a career. This finding suggests a need to enhance the quality and effectiveness of career awareness efforts at the secondary level to better guide students into SBAE teaching pathways.

Diversify the Teacher Pipeline

The SBAE workforce remains disproportionately white and female, despite growing diversity among college of agriculture students. To create a more representative educator workforce, recruitment and support strategies must explicitly address the barriers faced by underrepresented groups—especially male students and students of color.

Further research is needed to pinpoint where attrition occurs along the FFA-to-university-to-program completer career journey. Inclusive recruitment campaigns, culturally responsive advising, and sustained mentoring programs are vital. Strengthening partnerships and collaboration between 1862 and 1890 land-grant institutions and non-land-grant universities can also improve outreach and resource sharing, ultimately enhancing equity in agricultural teacher preparation.

Reengage Former and Delayed-Entry Teachers

Each year, many teachers leave the profession for reasons not rooted in dissatisfaction—such as relocation or caregiving—and they represent a valuable pool of experienced, certified professionals. Institutions and state agencies should develop systems to track these individuals and provide streamlined re-entry pathways, including flexible certification renewal or targeted professional development.

In parallel, delayed-entry teachers (those who complete licensure but do not immediately enter the profession) should be studied. Understanding their motivations and obstacles may offer insights for improving placement and recruitment strategies.

Improve Placement, Partnerships, and Regional Collaboration

Program completers show a strong preference for in-state employment. Universities should strengthen pipelines with local school districts and education agencies to ensure timely and appropriate placement of new graduates. For those willing to relocate, more robust support is needed around interstate licensure reciprocity, job search assistance, and relocation resources.

Regional collaboration among institutions can also enhance job placement outcomes. By developing shared placement networks, exchanging best practices, and coordinating recruitment strategies, institutions can improve yield rates and better meet the needs of both graduates and school systems across the region.

Elevate the Profession and Clarify Licensure Pathways

The public image of the teaching profession plays a critical role in recruitment. To attracts future SBAE teachers, awareness campaigns should highlight the career benefits, personal fulfillment and societal impact of teaching agriculture. Compelling testimonies from successful alumni and real-work examples of teacher influence can help inspire prospective candidates.

State and institutional leaders must also prioritize clear communication around licensure pathways – both traditional and alternative. Improved clarity around certification processes can reduce confusion, remove access barriers, and potentially draw more individuals into or back into the teaching profession.

In addition to SBAE-specific efforts, expanding partnerships with broader education recruitment organizations such as Teach.org and Educators Rising can amplify impact. These groups offer state and national visibility, marketing tools, and candidate networks that can complement existing SBAE recruitment strategies. By collaborating across sectors, the profession can more effectively reach diverse audience and elevate the appeal of agricultural education as a dynamic and rewarding career.

Assess Institutional Capacity and Monitor Trends

Colleges and universities that prepare agricultural education teachers should regularly evaluate their ability to expand SBAE teacher preparation programs. Key factors such as faculty workload, capacity to supervise student teaching internships, and the availability of placement sites all influence how much a program can grow. Decisions about program design, curriculum content, and staffing should be guided by current and projected teacher demand at the national, regional, and state levels – as well as by state licensure requirements and workforce needs in agriculture, food, and natural resources.

References

Adams, G.J. (1996). Using a Cox Regression Model to Examine Voluntary Teacher Turnover. *Journal of Experimental Education, 64*, 267-285.

American Psychological Association (APA). (2014). *Assessing and evaluating teacher preparation programs: APA task force report*. https://www.apa.org/ed/schools/teaching-learning/teacher-preparation-programs.pdf

Anderson, E. L. (2002). *The new professoriate: Characteristics, contributions, and compensation.* American Council on Education Center for Policy Analysis. https://www.acenet.edu/Documents/New-Professoriate-Characteristics-Contributions-and-Compensation-2002.pdf

Bailey, J., Hanita, M., Khanani, N., & Zhang, X., (2021). *Analyzing teacher mobility and retention: Guidance and considerations report 1* (REL 2021–080) U S Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands http://ies ed gov/ncee/edlabs.

Bailey, L. H. (1908). *On the training of persons to teach agriculture in the public schools.* U.S. Bureau of Education Bulletin No. 1. https://files.eric.ed.gov/fulltext/ED542844.pdf

Baldwin, R. G., Chronister, J. L., (2001). *Teaching without tenure: Policies and practices for a new era.* Baltimore, MD: Johns Hopkins

Bill, K., Bowsher, A., Malen, B., Rice, J.K., Saltmarsh, J.E. (2022). *Making matters worse? COVID-19 and teacher recruitment*. Phi Delta Kappan, 103, 36 - 40.

Bowling, A. M., Ball, A. L. (2018). Alternative Certification: A Solution or an Alternative Problem? *Journal of Agricultural Education*, *59*(2), 109–122. https://doi.org/10.5032/JAE.2018.02109

Bricker, G. A. (1914). *Agricultural education for teachers.* New York, NY: American Book.

Brill, S., McCartney, A. (2008). Stopping the Revolving Door: Increasing Teacher Retention. Politics and Policy, 36, 750-774.

Camp, A., Zamarro, G., McGee, J. (2024). *Looking Back and Moving Forward: COVID-19's Impact on the Teacher Labor Market and Implications for the Future*. Educational Evaluation and Policy Analysis.

Camp, W. G. (1987). A national study of the supply and demand for teachers of agricultural education in 1986. Blacksburg, VA: Virginia Polytechnic Institute and State University.

Camp, W. G. (1998). *A national study of the supply and demand for teachers of agricultural education in 1995*. Blacksburg, VA: Virginia Polytechnic Institute and State University.

Camp, W. G. (2000). *A national study of the supply and demand for teachers of agricultural education in 1999-2001*. Blacksburg, VA: Virginia Polytechnic Institute and State University.

Camp, W. G., Broyles, T., Skelton, N. S. (2002). *The 34th volume of a national study of the supply and demand for teachers of agricultural education 199-2001.* Blacksburg, VA: Virginia Polytechnic Institute and State University, American Association for Agricultural Education.

Carver-Thomas, D., Burns, D., Leung, M., Ondrasek, N.R. (2022). *Teacher Shortages During the Pandemic: How California Districts Are Responding*. Learning Policy Institute.

Cherng, H.-Y. S., Halpin, P. F. (2016, October 6). *The Importance of Minority Teachers: Student Perceptions of Minority Versus White Teachers. Educational Researcher, 45*(7), 407-420. https://doi.org/10.3102/0013189X16671718

Choate, K., Goldhaber, D., Theobald, R. (2021). *The effects of COVID-19 on teacher preparation.* Phi Delta Kappan, 102, 52 - 57.

Claflin, K., Lambert, M. D., Stewart, J. (2020). An investigation of the routes to certification and turnover intentions of Wisconsin agriculture teachers. Journal of Agricultural Education, 61(1), 128–139. https://doi.org/10.5032/jae.2020.01128

Coleman, B. M., Bunch, J. C., & Thoron, A. C. (2020). Identifying agriscience teachers' instructional practice professional development needs by certification type. Journal of Agricultural Education, 61(3), 86–100. DOI: https://doi.org/10.5032/jae.2020.03086

Conley, V. M., Leslie, D. W., Zimbler, L. J., (2002). *Part-time instructional faculty and staff: Who they are, what they do, and what they think.* https://nces.ed.gov/pubs2002/2002163.pdf

Cotton, W.A. (2005). Teacher recruitment by secondary agricultural educators. Montana State University - Bozeman, College of Agriculture. Boseman, MT. Retrieved from https://scholarworks.montana.edu/items/0e587e46-e15f-4776-9704-c52e8f64d5a0 .

Croom, D.B., (2008). *The development of the integrated three-component model of agricultural education*. Journal of Agricultural Education, 49, 110-120. https://doi.org/10.5032/jae.2008.01110

Cross, F. (2017). Teacher shortage areas nationwide listing 1990-1991 through 2017-2018. https://www2.ed.gov/about/offices/list/ope/pol/ateachershortageareasreport2017-18.pdf

Darling-Hammond, L., Baratz-Snowden, J. (2007). *A Good Teacher in Every Classroom: Preparing the Highly Qualified Teachers Our Children Deserve*. Educational Horizons, 85(2), 111–132. http://www.jstor.org/stable/42926597

Dillman, D. A., Smyth, J. D., Christian, L. M. (2014). *Internet, mail, and mixed-mode surveys: The tailored design method.* Wiley.

Eck, C. J., Edwards, C. (2019). *Teacher shortage in School-based Agricultural Education (SBAE): A historical review. Journal of Agricultural Education*, *60*(4), 223 – 239, https://doi:10.5032/jae.2019.04223

Eck, C. J., Toombs, J. M., & Robinson, J. S. (2021). Intent to Teach: Perspectives from Pre-Service Agricultural Education Teachers. *Journal of Agricultural Education*, *62*(1), 212–226. https://doi.org/10.5032/jae.2021.01212

Egalite, A. J., Kisida, B., Winters, M. A. (2015, April). *Representation in the classroom: The effect of own-race teachers on student achievement*. *Economics of Education Review, 45*, Pages 44-52. https://doi.org/10.1016/j.econedurev.2015.01.007.

Ehrenberg, R. G. (2004). *Don't blame faculty for high tuition: The annual report of the status of the profession*. *Academe, 90*(2), 19-103. https://www.aaup.org/file/2003-04-Economic-Status-Report.pdf

Ehrenberg, R. G., & Zhang, L. (2004). *The changing nature of faculty employment.* https://www.researchgate.net/publication/37156442_The_Changing_Nature_of_Faculty_Employment

FAEIS, (2024). *Food and Agricultural Education Information System (*[data set]. www.faeis.cals.vt.edu/. Accessed 10 Nov. 2024.

Falch, T. (2022). Teacher education and early teaching career. *Teachers and Teaching*, *28*(8), 943–963. https://doi.org/10.1080/13540602.2022.2137135

Federal Board for Vocational Education. (1921). *Fifth annual report to congress*. Retrieved from https://va.gov/vetdata/docs/FY1921.pdf

Garcia, E. & Weiss, E. (2019a). *The teacher shortage is real, large, and growing, and worse than we thought: The first report in the 'Perfect storm in the teacher labor market' series*. Economic Policy Institute. https://www.epi.org/publication/the-teacher-shortage-is-real-large-and-growing-and-worse-than-we-thought-the-first-report-in-the-perfect-storm-in-the-teacher-labor-market-series

Garcia, E. & Weiss, E. (2019b). *U.S. schools struggle to hire and retain teachers: The second report in the 'Perfect storm in the teacher labor market' series*. Economic Policy Institute. https://www.epi.org/publication/u-s-schools-struggle-to-hire-and-retain-teachers-the-second-report-in-the-perfect-storm-in-the-teacher-labor-market-series/

Garcia, E. & Weiss, E. (2019c). *Low relative pay and high incidence of moonlighting play a role in the teacher shortage, particularly in high-poverty schools: the third report in the 'Perfect storm in the teacher labor market' series*. Economic Policy Institute. https://www.epi.org/publication/low-relative-pay-and-high-incidence-of-moonlighting-play-a-role-in-the-teacher-shortage-particularly-in-high-poverty-schools-the-third-report-in-the-perfect-storm-in-the-teacher-labor-marke/

Gaur, S., & Dulawat, M.S. (2011). *Weighted Average Closest Fit Approach to Handle Missing Values.* International Journal of Mathematical Archive, 2.

Green, D. W. (2007). *Adjunct faculty and the continuing quest for quality. New Directions for Community Colleges*, *2007* (140), 29-39. doi:10.1002/cc.302

Hainline, M. S., Ulmer, J. D., Ritz, R. R., Burris, S., & Gibson, C. D. (2015). Career and family balance of Texas agricultural science teachers by gender. *Journal of Agricultural Education*, *56*(4), 31–46. https://doi.org/10.5032/jae.2015.04031

Haj-Broussard, Michelle & Hall, Tom & Allen, Sheila & Stephens, Cyndy & Person, Vickie & Johnson, Tina. (2016). Alternative certification teacher and candidate retention: Measures of educator preparation, certification, and school staffing effectiveness. *Journal of the National Association for Alternative Certification*. *11*(2).

Hancock, C. B., & Scherff, L. (2010). Who Will Stay and Who Will Leave? Predicting Secondary English Teacher Attrition Risk. Journal of Teacher Education, 61(4), 328-338. https://doi.org/10.1177/0022487110372214

Ingersoll, R.M., Merrill, E.B., Stuckey, D.J., Collins, G.J., & Harrison, B.L. (2021). The Demographic Transformation of the Teaching Force in the United States. *Education Sciences*.

Jaquette, O., & Curs, B.R. (2022). Enrollment Growth and Faculty Hiring at Public Research Universities. *Research in Higher Education, 64*, 349-378.

Jarvis, C. D. (1921). *Agricultural education* (Bulletin 1921, No. 40). Washington DC: U. S. Department of the Interior.

Kantrovich, A. J. (2007). *The 35th volume of a national study of the supply and demand for teachers of agricultural education 2004-2006.* Morehead, KY: Morehead State University, American Association for Agricultural Education.

Kantrovich, A. J. (2010). *The 36th volume of a national study of the supply and demand for teachers of agricultural education 2006-2009.* West Olive, MI: Michigan State University, American Association for Agricultural Education.

Kelsey, K. D. (2006). Teacher attrition among women in secondary agricultural education.. *Journal of Agricultural Education*, *47*(3), 117–129. https://doi.org/10.5032/jae.2006.03117

Kelsey, K. D. (2006). TEACHER ATTRITION AMONG WOMEN IN SECONDARY AGRICULTURAL EDUCATION. Journal of Agricultural Education, 47(3), 117–129. https://doi.org/10.5032/jae.2006.03117

Kelsey, K. D. (2006). Teacher attrition among women in secondary agricultural education.. *Journal of Agricultural Education*, *47*(3), 117–129. https://doi.org/10.5032/jae.2006.03117

Krieger, N., LeBlanc, M.E., Waterman, P., Reisner, S.L., Testa, C., & Chen, J.T. (2023). Decreasing survey response rates in the time of COVID-19: Implications for analyses of population health and health inequities. *American journal of public health*, e1-e4. https:// doi: 10.2105/AJPH.2023.307267.

Lawver, R. G., Foster, D. D., & Smith, A. R. (2018). *Status of the U.S. Supply and Demand for Teachers of Agricultural Education, 2014 - 2016.* https://aaae.agedweb.org/nsd/reports.aspx

Lindsay, J. J., Wan, Y., Gossin-Wilson, W. (2009). *Methodologies used by Midwest Region states for studying teacher supply and demand.* https://files.eric.ed.gov/fulltext/ED506631.pdf

Lucksnat, C., Richter, E., Henschel, S., Hoffmann, L., Schipolowski, S., & Richter, D. (2024). Comparing the teaching quality of alternatively certified teachers and traditionally certified teachers: findings from a large-scale study. *Educational Assessment, Evaluation and Accountability*. ***36***, 75–106, https://doi.org/10.1007/s11092-023-09426-1

Luft, V. D. (1996). *Extent to which cultural diversity is addressed in secondary agricultural education.* Journal of Agricultural Education, 37(3), 67–75. https://doi.org/10.5032/jae.1996.03067

Marso, R.N., & Pigge, F.L. (1997). A Longitudinal Study of Persisting and Nonpersisting Teachers' Academic and Personal Characteristics. Journal of Experimental Education, 65, 243-254.

National Center for Education Statistics (NCES) (2022). *Characteristics of Public School Teachers Who Completed Alternative Route to Certification Programs. Condition of Education*. U.S. Department of Education, Institute of Education Sciences. Retrieved 9/1/24, from https://nces.ed.gov/programs/coe/indicator/tlc.

National Center for Education Statistics. (2023). *Characteristics of Public School Teachers*. Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved [10/10/2024], from https://nces.ed.gov/programs/coe/indicator/clr.

National Center for Education Statistics. (2024a). *Racial/Ethnic Enrollment in Public Schools.* Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved 10/01/2024], from https://nces.ed.gov/programs/coe/indicator/cge.

National Center for Education Statistics. (2024b). *Standard 4-1: NCES statistical standards.* U.S. Department of Education. Retrieved [11/10/2024], from https://nces.ed.gov/statprog/2002/std4_1.asp

National Center for Education Statistics. (2024c). *Teacher Turnover: Stayers, Movers, and Leavers.* Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved [10/10/2024], from https://nces.ed.gov/programs/coe/indicator/slc.

National FFA Organization. (2017). *FFA statistics.* https://www.ffa.org/about/what-is-ffa/statistics

National FFA Organization. (2024). *2023-2024 Fact Sheet*. https://ffa.app.box.com/s/lgrbxeltnzsnmaw4agsz08mnuq1vqto1.

Noor, M., Yahaya, A.S., Ramli, N.A., & Al Bakri, A.M. (2013). *Filling Missing Data Using Interpolation Methods: Study on the Effect of Fitting Distribution*. Key Engineering Materials, 594-595, 889 - 895.

Podolsky. A., Kini. T., Bishop, J., Darling-Hammond, L. (2016). *Solving the teacher shortage: How to attract and retain excellent educators*. http://www.foodandagpolicy.org/content/food-and-agricultural-education-united-states

Quartz, K.H., Thomas, A., Masyn, K., Lyons, K.B., Olsen, B. (2008). Careers in motion: a longitudinal retention study of role changing among early-career urban educators *Teachers College Record*, 110 , pp. 218-250

Robinson, J. S., & Edwards, M. C. (2012). Assessing the teacher self–efficacy of agriculture instructors and their early career employment status: A comparison of certification types. *Journal of Agricultural Education*, *53*(1), 150–161. https://doi.org/10.5032/jae.2012.01150

Sass, D., Seal, A., Martin, N. (2011). Predicting teacher retention using stress and support variables. Journal of Educational Administration. 49. 200-215. https://doi.org/10.1108/09578231111116734.

Sheehan, C. Z., Moore, L. L. (2019). *Trends and Impact of FFA Affiliation on National FFA Organization Student Membership: A Secondary Analysis of Existing Data*. Journal of Agricultural Education, 60(2), 210–221. https://doi.org/10.5032/jae.2019.02210

Shen, J. (1997). Has the Alternative Certification Policy Materialized Its Promise? A Comparison Between Traditionally and Alternatively Certified Teachers in Public Schools. *Educational Evaluation and Policy Analysis, 19*, 276 - 283. https://doi.org/10.3102/0162373701900327

Shrivastava, S.R., Shrivastava, P.S. (2021). Enhancing participants' response rate in online medical educational surveys. *Medical Journal of Babylon, 18*, 66 - 68. https://doi.org/10.4103/MJBL.MJBL_84_20

Stair, D. K., Figland, W., Blackburn, D. J., & Smith, D. E. (2019). Describing the Differences in the Professional Development Needs of Traditionally and Alternatively Certified Agriculture Teachers in Louisianna. Journal of Agricultural Education, 60(3), 262–276. https://doi.org/10.5032/jae.2019.03262

Swanson, H. B. (1942). *Teacher training in agriculture*. In R. W. Stimson & F. W. Lathrop (Eds.), History of agricultural education of less than college grade in the United States (pp. 515-531). U.S. Government Printing Office.

Taie, S., Lewis, L. (2023). *Teacher Attrition and Mobility. Results From the 2021–22 Teacher Follow-up Survey to the National Teacher and Principal Survey (NCES 2024-039).* U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved [9/3/2024] from https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2024039.

Tippens, A., Ricketts, J. C., Morgan, A. C., Navarro, M., & Flanders, F. B. (2013). Factors related to teachers' intention to leave the classroom early. *Journal of Agricultural Education*, *54*(4), 58–72. https://doi.org/10.5032/jae.2013.04058

True, A. C. (1929). *A history of agricultural education in the United States: 1785-1925*. Washington, DC: U.S. Government Printing Office.

Woodin R.J. (1967). *A national study of the supply and demand for teachers of vocational agricultural for the 1966-1967 school year*. Columbus, Ohio: The Ohio State University.

Yoest, E., Kane, M. (2015). How the Three Circle Model Develops 21st Century Skills in Students. *The Agricultural Education magazine, 88*, 23.

Zhang, L., Ehrenberg, R.G., Liu, X. (2015). Changing Faculty Employment at Four-Year Colleges and Universities in the United States. *Macroeconomics: Employment*.

Appendices

Appendix A --: Historical Timeline of AAAE National Supply and Demand Study

Date	Description
2014- Present	An RFP was distributed to the AAAE membership to collect data for a 6-year period of time from 2014- 2020. Dr's. Daniel Foster of Pennsylvania State University, Amy Smith of University of Minnesota and Rebecca Lawver of Utah State University were selected by the AAAE Member Services Committee and AAAE Board of Directors with the directive of preparing six annual reports and two 3- year reports. The contract was extended to 2026 in 2020.
2009-2013	No National Supply and Demand Study conducted by AAAE
2004-2009	Project leader was Adam J. Kantrovich, Michigan State University Extension
2004	In May 2014, Adam J. Kantrovich of Morehead State University is selected to lead the project with the assistance of Dr. Tom Broyles of Virginia Polytechnic Institute and State University.
1995	Last annual study conducted until the 2014.
1994	American Vocational Association, Agricultural Education Division, votes at annual convention to change to a 3-year cycle study.
1992-2001	Project leader was William G. Camp, Virginia Polytechnic Institute and State University
1990-1991	Project leader was J. Oliver of Virginia Polytechnic Institute and State University
1985-1989	Project leader was William G. Camp, Virginia Polytechnic Institute and State University
1974-1984	Project leader was David Craig, University of Tennessee
1965-1973	Project leader was Ralph Woodlin, Ohio State University and University of Tennessee, Knoxville

Appendix B – Published Reports of the AAAE National Supply and Demand Study

Author	Study Dates	Title
Woodin	1965	
Woodin	1966	
Woodin	1967	Supply and Demand for Teachers of Vocational Agriculture in the United States for the 1966-67 School Year
Woodin	1968	Supply and Demand for Teachers of Vocational Agriculture in the United States for the 1967-68 School Year
Woodin	1969	Supply and Demand for Teachers of Vocational Agriculture in 1969
Woodin	1970	Supply and Demand for Teachers of Vocational Agriculture in 1970
Woodin	1971	Supply and Demand for Teachers of Vocational Agriculture in 1971
Woodin	1972	
Woodin	1973	
Craig	1974	Supply and Demand for Teachers of Vocational Agriculture in 1974
Craig	1975	Supply and Demand for Teachers of Vocational Agriculture in 1975
Craig	1976	
Craig	1977	
Craig	1978	
Craig	1979	
Craig	1980	A National Study of the Supply and Demand for Teachers of Vocational Agricultural in 1980
Craig	1981	
Craig	1982	
Craig	1983	A National Study of the Supply and Demand for Teachers of Vocational Agricultural in 1983
Craig	1984	A National Study of the Supply and Demand for Teachers of Vocational Agricultural in 1984
Camp	1985	
Camp	1986	
Camp	1987	
Camp	1988	
Camp	1989	
	1990	
Oliver	1991	
Camp	1992	A National Study of the Supply and Demand for Teachers of Agricultural Education in 1992
Camp	1993	

Camp	1994	
Camp	1995	A National Study of the Supply and Demand for Teachers of Agricultural Education in 1995.
Camp	1996-1998	A National Study of the Supply and Demand for Teachers of Agricultural Education in 1996-1998
Camp	1999-2001	A National Study of the Supply and Demand for Teachers of Agricultural Education in 1999-2001
Kantrovich	2004-2006	A National Study of the Supply and Demand for Teachers of Agricultural Education From 2004-2006
Kantrovich	2006-2009	The 36th Volume of A National Study of the Supply and Demand for Teachers of Agricultural Education 2006-2009
Lawver, Smith, Foster	2014	National Agricultural Education Supply & Demand Study 2014 Executive Summary
Lawver, Smith, Foster	2015	National Agricultural Education Supply & Demand Study 2015 Executive Summary
Lawver, Smith, Foster	2016	National Agricultural Education Supply & Demand Study 2016 Executive Summary
Lawver, Smith, Foster	2014-2016	Status of the U.S. Supply and Demand for Teachers of Agricultural Education, 2014 - 2016
Lawver, Smith, Foster	2017	National Agricultural Education Supply & Demand Study 2017 Executive Summary
Lawver, Smith, Foster	2018	National Agricultural Education Supply & Demand Study 2018 Executive Summary
Lawver, Smith, Foster	2019	National Agricultural Education Supply & Demand Study 2019 Executive Summary
Lawver, Smith, Foster, Spiess	2017-2019	Status of the U.S. Supply and Demand for Teachers of Agricultural Education, 2017 - 2019
Lawver, Smith, Foster	2020	National Agricultural Education Supply & Demand Study 2020 Executive Summary
Lawver, Smith, Foster	2021	National Agricultural Education Supply & Demand Study 2021 Executive Summary
Lawver, Smith, Foster	2022	National Agricultural Education Supply & Demand Study 2022 Executive Summary
Lawver, Smith, Foster, Spiess	2020-2022	Status of the U.S. Supply and Demand for Teachers of Agricultural Education, 2020-2022

Note: Where no title is listed, no copies of the report can be found. Reports are known to exist due to references in later reports. Researchers continue to search for missing reports.

Appendix C -- Supply Institutional Frame

Regional information in this report was primarily organized by the regional breakdown of the American Association of Agricultural Education (AAAE) as identified by that organization's constitution (AAAA, n.d.). Institutions listed were institutions that comprised the most recent and the most accurate frame of the national supply data collection in 2020-202217, 2018, and 2019. We would like to acknowledge the people who took the time to respond to the surveys. This study is not possible without their help.

AAAE Region	North Central			Southern			Western		
Year	2020	2021	2022	2020	2021	2022	2020	2021	2022
Institutions	40	42	39	48	49	49	18	16	16
Institutions Reporting	35	33	33	40	37	40	14	10	14

Contacts are listed for respondents.

AAAE Region/State	Institution	Year	Submitted By
North Central			
Connecticut	University of Connecticut	2020	Patricia Jepson
Connecticut	University of Connecticut	2021	Patricia Jepson
Connecticut	University of Connecticut	2022	Patricia Jepson
Delaware	Delaware State University	2020	Amanda Powell
Delaware	Delaware State University	2021	Amanda Powell
Delaware	Delaware State University	2022	Amanda Powell
Delaware	University of Delaware	2021	
Illinois	Illinois State University	2020	Lucas D. Maxwell
Illinois	Illinois State University	2021	
Illinois	Illinois State University	2022	Lucas D. Maxwell
Illinois	Southern Illinois University	2020	Seburn L. Pense
Illinois	Southern Illinois University	2021	Steven Sill
Illinois	Southern Illinois University	2022	Steven Sill
Illinois	University of Illinois at Urbana-Champaign	2020	Gary Ochs
Illinois	University of Illinois at Urbana-Champaign	2021	Gary Ochs
Illinois	University of Illinois at Urbana-Champaign	2022	Gary Ochs
Illinois	Western Illinois University	2020	Andrew Baker
Illinois	Western Illinois University	2021	Andrew Baker
Illinois	Western Illinois University	2022	Andrew Baker
Indiana	Huntington University	2020	Raymie Porter
Indiana	Huntington University	2021	Raymie Porter
Indiana	Huntington University	2022	Raymie Porter
Indiana	Purdue University	2020	Allen Talbert
Indiana	Purdue University	2021	Allen Talbert

AAAE Region/State	Institution	Year	Submitted By
Indiana	Purdue University	2022	Allen Talbert
Iowa	Dordt University	2020	Gary De Vries
Iowa	Dordt University	2021	Gary De Vries
Iowa	Dordt University	2022	Gary De Vries
Iowa	Iowa State University	2020	Scott Smalley
Iowa	Iowa State University	2021	Scott Smalley
Iowa	Iowa State University	2022	Scott Smalley
Iowa	Morningside University	2020	Thomas Paulsen
Iowa	Morningside University	2021	Thomas Paulsen
Iowa	Morningside University	2022	Thomas Paulsen
Kansas	Fort Hays State University	2020	Jeremy Ryan
Kansas	Fort Hays State University	2021	Jeremy Ryan
Kansas	Fort Hays State University	2022	
Kansas	Kansas State University	2020	Brandie Disberger
Kansas	Kansas State University	2021	Brandie Disberger
Kansas	Kansas State University	2022	Brandie Disberger
Maryland	University of Maryland	2020	Melissa Leiden Welsh
Maryland	University of Maryland	2021	Melissa Leiden Welsh
Maryland	University of Maryland	2022	Melissa Leiden Welsh
Maryland	University of Maryland Eastern Shore	2020	Jurgen Schwarz
Maryland	University of Maryland Eastern Shore	2021	Jurgen Schwarz
Maryland	University of Maryland Eastern Shore	2022	
Massachusetts	University of Massachusetts	2020	
Massachusetts	University of Massachusetts	2021	
Michigan	Michigan State University	2020	Matt R. Raven
Michigan	Michigan State University	2021	Matt R. Raven
Michigan	Michigan State University	2022	Matt R. Raven
Minnesota	Southwest Minnesota State University	2020	Kristin Kovar
Minnesota	Southwest Minnesota State University	2021	Kristin Kovar
Minnesota	Southwest Minnesota State University	2022	Kristin Kovar
Minnesota	University of Minnesota Crookston	2020	Nate Purrington
Minnesota	University of Minnesota Crookston	2021	
Minnesota	University of Minnesota Crookston	2022	Nate Purrington
Minnesota	University of Minnesota-Twin Cities	2020	Amy Smith
Minnesota	University of Minnesota-Twin Cities	2021	Nate Purrington
Minnesota	University of Minnesota-Twin Cities	2022	Amy Smith
Missouri	College of the Ozarks	2020	Donn Russell
Missouri	College of the Ozarks	2021	Donn Russell
Missouri	College of the Ozarks	2022	Donn Russell
Missouri	Missouri State University	2020	Jim Hutter
Missouri	Missouri State University	2021	
Missouri	Missouri State University	2022	Jim Hutter

AAAE Region/State	Institution	Year	Submitted By
Missouri	Northwest Missouri State University	2020	Jackie Lacy
Missouri	Northwest Missouri State University	2021	Jackie Lacy
Missouri	Northwest Missouri State University	2022	Jackie Lacy
Missouri	Southeast Missouri State University	2020	
Missouri	Southeast Missouri State University	2021	
Missouri	Southeast Missouri State University	2022	
Missouri	University of Central Missouri	2020	Mike Keilholz
Missouri	University of Central Missouri	2021	
Missouri	University of Central Missouri	2022	
Missouri	University of Missouri	2020	John Tummons
Missouri	University of Missouri	2021	John Tummons
Missouri	University of Missouri	2022	John Tummons
Nebraska	University of Nebraska	2020	Matt Kreifels
Nebraska	University of Nebraska	2021	Matt Kreifels
Nebraska	University of Nebraska	2022	Matt Kreifels
New Hampshire	University of New Hampshire	2020	
New Hampshire	University of New Hampshire	2021	
New Jersey	Rutgers University	2020	Laura Lawson
New Jersey	Rutgers University	2021	Thomas Leustek
New Jersey	Rutgers University	2022	Thomas Leustek
New York	Cornell University	2020	Terry Hughes
New York	Cornell University	2021	Terry Hughes
New York	Cornell University	2022	Terry Hughes
New York	SUNY Oswego	2021	Jan Woodworth
New York	SUNY Oswego	2022	Jan Woodworth
North Dakota	North Dakota State University	2020	Adam Marx
North Dakota	North Dakota State University	2021	Adam Marx
North Dakota	North Dakota State University	2022	Adam Marx
Ohio	Central State University	2020	Jon Henry
Ohio	Central State University	2021	Jon Henry
Ohio	Central State University	2022	Katrina Swinehart
Ohio	The Ohio State University	2020	Tracy Kitchel
Ohio	The Ohio State University	2021	Caryn Filson
Ohio	The Ohio State University	2022	Caryn Filson
Ohio	Wilmington College	2020	Monte Anderson
Ohio	Wilmington College	2021	
Ohio	Wilmington College	2022	
Pennsylvania	Delaware Valley University	2020	
Pennsylvania	Delaware Valley University	2021	David D. Timony
Pennsylvania	Delaware Valley University	2022	David D. Timony
Pennsylvania	Pennsylvania State University	2020	Kevin Curry
Pennsylvania	Pennsylvania State University	2021	Kevin Curry

AAAE Region/State	Institution	Year	Submitted By
Pennsylvania	Pennsylvania State University	2022	Kevin Curry
South Dakota	South Dakota State University	2020	Troy White
South Dakota	South Dakota State University	2021	Troy White
South Dakota	South Dakota State University	2022	Laura Hasslequist
West Virginia	West Virginia University	2020	Jessica Blythe
West Virginia	West Virginia University	2021	Jessica Blythe
West Virginia	West Virginia University	2022	Jessica Blythe
Wisconsin	University of Wisconsin - River Falls	2020	James Graham
Wisconsin	University of Wisconsin - River Falls	2021	James Graham
Wisconsin	University of Wisconsin - River Falls	2022	James Graham
Wisconsin	University of Wisconsin-Platteville	2020	
Wisconsin	University of Wisconsin-Platteville	2021	Mark Zidon
Wisconsin	University of Wisconsin-Platteville	2022	
Southern			
Alabama	Auburn University	2020	Christopher Clemons
Alabama	Auburn University	2021	Christopher Clemons
Alabama	Auburn University	2022	Christopher Clemons
Arkansas	Arkansas State University	2020	Kevin Humphrey
Arkansas	Arkansas State University	2021	
Arkansas	Arkansas State University	2022	Nina Crutchfield
Arkansas	Arkansas Tech University	2020	Justin Killingsworth
Arkansas	Arkansas Tech University	2021	J. Kevin Humphrey
Arkansas	Arkansas Tech University	2022	Justin Killingsworth
Arkansas	Arkansas Tech University	2022	Justin Killingsworth
Arkansas	Southern Arkansas University	2020	Copie Moore
Arkansas	Southern Arkansas University	2021	Copie Moore
Arkansas	Southern Arkansas University	2022	Copie Moore
Arkansas	University of Arkansas	2020	Kate Shoulders
Arkansas	University of Arkansas	2021	Christopher Estepp
Arkansas	University of Arkansas	2022	Christopher Estepp
Arkansas	University of Arkansas Pine Bluff	2021	
Florida	University of Florida	2020	JC Bunch
Florida	University of Florida	2021	JC Bunch
Florida	University of Florida	2022	Tre Easterly
Georgia	Abraham Baldwin Agricultural College	2020	Frank Flanders
Georgia	Abraham Baldwin Agricultural College	2021	Frank Flanders
Georgia	Abraham Baldwin Agricultural College	2022	Andrew Thoron
Georgia	Fort Valley State University	2020	Curtis Borne
Georgia	Fort Valley State University	2021	
Georgia	Fort Valley State University	2022	
Georgia	University of Georgia	2020	Barry Croom
Georgia	University of Georgia	2021	Eric Rubenstein

AAAE Region/State	Institution	Year	Submitted By
Georgia	University of Georgia	2022	Eric Rubenstein
Kentucky	Eastern Kentucky University	2020	Mike McDermott
Kentucky	Eastern Kentucky University	2021	Mike McDermott
Kentucky	Eastern Kentucky University	2022	Mike McDermott
Kentucky	Morehead State University	2020	Joyce Stubbs
Kentucky	Morehead State University	2021	Joyce Stubbs
Kentucky	Morehead State University	2022	Joyce Stubbs
Kentucky	Murray State University	2020	Kimberly A. Bellah
Kentucky	Murray State University	2021	
Kentucky	Murray State University	2022	Kimberly A. Bellah
Kentucky	University of Kentucky	2020	Stacy Vincent
Kentucky	University of Kentucky	2021	Rebecca Epps
Kentucky	University of Kentucky	2022	Rebekah Epps
Kentucky	Western Kentucky University	2020	Thomas Kingery
Kentucky	Western Kentucky University	2021	Thomas Kingery
Kentucky	Western Kentucky University	2022	Thomas Kingery
Louisiana	Louisiana State University	2020	Kristin Stair
Louisiana	Louisiana State University	2021	Kristin Stair
Louisiana	Louisiana State University	2022	Kristin Stair
Louisiana	Louisiana Tech	2020	
Louisiana	Louisiana Tech	2021	
Louisiana	Louisiana Tech	2022	
Louisiana	McNeese State University	2020	
Louisiana	McNeese State University	2021	
Louisiana	McNeese State University	2022	
Mississippi	Alcorn State University	2020	Avis Joseph
Mississippi	Alcorn State University	2021	Avis Joseph
Mississippi	Alcorn State University	2022	Avis Joseph
Mississippi	Mississippi State University	2020	O.P. McCubbins
Mississippi	Mississippi State University	2021	Kirk Swortzel
Mississippi	Mississippi State University	2022	Kirk Swortzel
North Carolina	Appalachian State University	2020	Jerianne Taylor
North Carolina	Appalachian State University	2021	Jerianne Taylor
North Carolina	Appalachian State University	2022	
North Carolina	Brevard College	2020	Gina Raicovich
North Carolina	Brevard College	2021	Gina Raicovich
North Carolina	Brevard College	2022	
North Carolina	North Carolina A&T State University	2020	Chastity Warren English
North Carolina	North Carolina A&T State University	2021	Chastity Warren English
North Carolina	North Carolina A&T State University	2022	Chastity Warren English
North Carolina	North Carolina State University	2020	Travis Park
North Carolina	North Carolina State University	2021	Travis Park

AAAE Region/State	Institution	Year	Submitted By
North Carolina	North Carolina State University	2022	Travis Park
North Carolina	University of Mount Olive	2020	Stephen Edwards
North Carolina	University of Mount Olive	2021	Stephen Edwards
North Carolina	University of Mount Olive	2022	Stephen Edwards
Oklahoma	Northwestern Oklahoma State University	2020	Mindi Clark
Oklahoma	Northwestern Oklahoma State University	2021	Mindi Clark
Oklahoma	Northwestern Oklahoma State University	2022	Mindi Clark
Oklahoma	Oklahoma Panhandle State University	2020	
Oklahoma	Oklahoma Panhandle State University	2021	
Oklahoma	Oklahoma Panhandle State University	2022	Tracy Kincannon
Oklahoma	Oklahoma State University	2020	Nathan Smith
Oklahoma	Oklahoma State University	2021	Nathan Smith
Oklahoma	Oklahoma State University	2022	Nathan Smith
Puerto Rico	University of PR at Mayaguez	2020	
Puerto Rico	University of PR at Mayaguez	2021	
Puerto Rico	University of PR at Mayaguez	2022	
South Carolina	Clemson University	2020	Catherine DiBendetto
South Carolina	Clemson University	2021	Catherine DiBendetto
South Carolina	Clemson University	2022	Catherine DiBendetto
Tennessee	Middle Tennessee State University	2020	Chaney Mosely
Tennessee	Middle Tennessee State University	2021	Chaney Mosely
Tennessee	Middle Tennessee State University	2022	Chaney Mosely
Tennessee	Tennessee State University	2020	John Ricketts
Tennessee	Tennessee State University	2021	John Ricketts
Tennessee	Tennessee State University	2022	
Tennessee	Tennessee Tech University	2020	
Tennessee	Tennessee Tech University	2021	
Tennessee	Tennessee Tech University	2022	Dennis Duncan
Tennessee	The University of Tennessee	2020	Christopher Stripling
Tennessee	The University of Tennessee	2021	Christopher Stripling
Tennessee	The University of Tennessee	2022	Christopher Stripling
Tennessee	University of Tennessee-Martin	2020	Will Bird
Tennessee	University of Tennessee-Martin	2021	Will Bird
Tennessee	University of Tennessee-Martin	2022	Will Bird
Texas	Angelo State University	2020	
Texas	Angelo State University	2021	
Texas	Angelo State University	2022	James "Will" Dickison
Texas	Sam Houston State University	2020	Dwayne Pavelock
Texas	Sam Houston State University	2021	Dwayne Pavelock
Texas	Sam Houston State University	2022	
Texas	Stephen F. Austin State University	2020	Candis Carraway
Texas	Stephen F. Austin State University	2021	Candis Carraway

AAAE Region/State	Institution	Year	Submitted By
Texas	Stephen F. Austin State University	2022	Candis Carraway
Texas	Sul Ross State University	2020	Jeanne Pinkerton
Texas	Sul Ross State University	2021	
Texas	Sul Ross State University	2022	
Texas	Tarleton State University	2020	Chris Haynes
Texas	Tarleton State University	2021	Chris Haynes
Texas	Tarleton State University	2022	Chris Haynes
Texas	Texas A&M University	2020	Tim Murphy
Texas	Texas A&M University	2021	Tim Murphy
Texas	Texas A&M University	2022	Tim Murphy
Texas	Texas A&M University-Commerce	2020	
Texas	Texas A&M University-Commerce	2021	Keith Frost
Texas	Texas A&M University-Commerce	2022	Keith Frost
Texas	Texas A&M University-Kingsville	2020	Steven Chumbley
Texas	Texas A&M University-Kingsville	2021	Steven Chumbley
Texas	Texas A&M University-Kingsville	2022	Steven Chumbley
Texas	Texas State University	2020	Ryan Anderson
Texas	Texas State University	2021	Ryan Anderson
Texas	Texas State University	2022	Ryan Anderson
Texas	Texas Tech University	2020	John Rayfield
Texas	Texas Tech University	2021	John Rayfield
Texas	Texas Tech University	2022	John Rayfield
Texas	West Texas A&M University	2020	Kevin Williams
Texas	West Texas A&M University	2021	Kevin Williams
Texas	West Texas A&M University	2022	Kevin Williams
Virginia	Ferrum College	2020	Christine Christianson
Virginia	Ferrum College	2021	Christine Christianson
Virginia	Ferrum College	2022	Christine Christianson
Virginia	Virginia State University	2020	
Virginia	Virginia State University	2021	
Virginia	Virginia State University	2022	Robert Corley
Virginia	Virginia Tech	2020	Donna Westfall-Rudd
Virginia	Virginia Tech	2021	Donna Westfall-Rudd
Virginia	Virginia Tech	2022	Donna Westfall-Rudd
Western			
Arizona	University of Arizona	2020	Quintin Molina
Arizona	University of Arizona	2021	Quintin Molina
Arizona	University of Arizona	2022	Quintin Molina
California	California Polytechnic State University; San Luis Obispo	2020	Ben Swan
California	California Polytechnic State University; San Luis Obispo	2021	Erin Gorter
California	California Polytechnic State University; San Luis Obispo	2022	Erin Gorter
California	California State Polytechnic University; Pomona	2020	

AAAE Region/State	Institution	Year	Submitted By
California	California State Polytechnic University; Pomona	2021	
California	California State Polytechnic University; Pomona	2022	
California	California State University; Chico	2020	Mollie Aschenbrener
California	California State University; Chico	2021	Mollie Aschenbrener
California	California State University; Chico	2022	Mollie Aschenbrener
California	California State University; Fresno	2020	Rosco Vaughn
California	California State University; Fresno	2021	
California	California State University; Fresno	2022	Steven Rocca
California	University of California; Davis	2020	Margaret L Martindale
California	University of California; Davis	2021	Margaret L Martindale
California	University of California; Davis	2022	Margaret L Martindale
Colorado	Colorado State University	2020	Nathan Clark
Colorado	Colorado State University	2021	Kellie Enns
Colorado	Colorado State University	2022	Nathan Clark
Idaho	University of Idaho	2020	Kattlyn Wolf
Idaho	University of Idaho	2021	
Idaho	University of Idaho	2022	Kattlyn Wolf
Montana	Montana State University	2020	Carl Igo
Montana	Montana State University	2021	Carl Igo
Montana	Montana State University	2022	Carl Igo
Nevada	University of Nevada - Reno	2020	Kristina Carey
Nevada	University of Nevada - Reno	2021	
Nevada	University of Nevada - Reno	2022	
New Mexico	Eastern New Mexico University	2020	Marshall Swafford
New Mexico	Eastern New Mexico University	2021	
New Mexico	Eastern New Mexico University	2022	Kalynn Baldock
New Mexico	New Mexico State University	2020	Steven Fraze
New Mexico	New Mexico State University	2021	Steve Fraze
New Mexico	New Mexico State University	2022	Don Edgar
Oregon	Oregon State University	2020	Josh Stewart
Oregon	Oregon State University	2021	Josh Stewart
Oregon	Oregon State University	2022	Josh Stewart
Utah	Southern Illinois University	2020	
Utah	Southern Utah University	2020	Dean Winward
Utah	Utah State University	2020	Tyson Sorensen
Utah	Utah State University	2021	Tyson Sorensen
Utah	Utah State University	2022	Tyson Sorensen
Washington	Washington State University	2020	
Washington	Washington State University	2021	J.D. Baser
Washington	Washington State University	2022	J.D. Baser
Wyoming	University of Wyoming	2020	
Wyoming	University of Wyoming	2021	

AAAE Region/State	Institution	Year	Submitted By
Wyoming	University of Wyoming	2022	Rosemary McBride

Appendix D -- Demand State Frame

Regional information in this report was primarily organized by the regional breakdown of the American Association of Agricultural Education (AAAE) as identified by that organization's constitution (AAAE, n.d.). We would like to acknowledge the people who took the time to respond to the surveys. This study is not possible without their help. The frame consists of all 50 states plus Puerto Rico and the Virgin Islands.

AAAE Region	North Central			Southern			Western		
Year	2020	2021	2022	2020	2021	2022	2020	2021	2022
States	24	24	24	15	15	15	14	14	14
Respondents	22	18	20	12	13	14	13	10	12

Contacts are listed for respondents.

AAAE Region	State	2020	2021	2022
North Central	Connecticut	Harold Mackin	Harold Mackin	Harold Mackin
	Delaware	Bart Gill	Bart Gill	Bart Gill
	Illinois	Susie Scott	Dean Dittmar	Dean Dittmar
	Indiana	Allen Talbert	Allen Talbert	Allen Talbert
	Iowa	Scott Johnson	Scott Johnson	Scott Johnson
	Kansas	Kurt Dillon	Kurt Dillon	Guy Shoulders
	Maine	Doug Robertson		
	Maryland	Terrie Shank	Terrie Shank	Terrie Shank
	Massachusetts	Kimberly LaFleur		Kimberly LaFleur
	Michigan	Mark Forbush	Mark Forbush	Mark Forbush
	Minnesota	Zane Sheehan	Zane Sheehan	Lavyne Rada
	Missouri	Marie Davis	Marie Davis	Marie Davis
	Nebraska	Donelle Wolters	Sarah Heideman	Stacie Turnbull
	New Hampshire	Maria VanderWoude		Maria VanderWoude
	New Jersey	Erin Noble	Erin Noble	Erin Noble
	New York	Shari Lighthall	Terry Hughes	Terry Hughes
	North Dakota	Aaron Anderson	Nikki Fideldy-Doll	Nikki Fideldy-Doll
	Ohio	Winkle Matt	Matt Winkle	Alyssa Bregel
	Pennsylvania	John Ewing	John Ewing	John Ewing
	Rhode Island	Aaron Gathen		
	South Dakota	Michelle Nelson	Dani Herring	
	Vermont			
	West Virginia			Kari Brown
	Wisconsin	Jeff Hicken	Cheryl Zimmerman	Cheryl Zimmerman
Southern	Alabama	James Chamness		Collin Adcock

	Arkansas		Gordon Eichelberger	Gordon Eichelberger
	Florida	JC Bunch	Tre Easterly	Tre Easterly
	Georgia	Billy Hughes	Billy Hughes	Billy Hughes
	Kentucky	Brandon Davis	Brandon Davis	Brandon Davis
	Louisiana		Eric Smith	Eric Smith
	Mississippi	Jill Wagner	Jill Wagner	Jill Wagner
	North Carolina	Josh Bledsoe	Josh Bledsoe	Josh Bledsoe
	Oklahoma	Scott Nemecek	Scott Nemecek	Scott Nemecek
	Puerto Rico			
	South Carolina	Billy Keels	Billy Keels	Jennifer Lyda
	Tennessee	Steve Gass	Steve Gass	Steve Gass
	Texas	Ray Pieniazek	Ray Pieniazek	Ray Pieniazek
	Virgin Islands	Nina Crutchfield	Velda Hendricks	Velda Hendricks
	Virginia	LaVeta Nutter	LaVeta Nutter	LaVeta Nutter
Western	Alaska	Kevin Fochs		Kevin Fochs
	Arizona	Bruce Watkins	Bruce Watkins	Bruce Watkins
	California	Charles Parker	Charles Parker	Charles Parker
	Colorado	Michael Womochil	Emily Fickbohm	Emily Fickbohm
	Guam			
	Hawaii	Evangeline Casinas		
	Idaho	Lucas Barnett		Jessie Kellogg
	Montana	Eric Tilleman	Eric Tilleman	Eric Tilleman
	Nevada	Heather Dye	Heather Dye	Kristina Carey
	New Mexico	Jerrod Smith	Liz Lopez	Gary Aycock
	Oregon	Lee Letsch	Lee Letsch	Lee Letsch
	Utah	William Deimler	William Deimler	William Deimler
	Washington	Denny Wallace	Denny Wallace	Tamara Whitcomb
	Wyoming	Stacy Broda	Stacy Broda	Stacy Broda

Appendix E -- Comprehensive Opened Ended Unique Challenges of Agricultural Teacher Educators Responses from 2020

The majority of our Agricultural Education classes are shared with Family and Consumer Sciences including our Laboratory Management and Methods classes. This requires us to teach more from the 30;000 foot view.

It is a 5th year internship program that takes place post-baccalaureate.

The university ended the B.S. option for Ag Ed as of 2020. The M.A. program is still available. Decisions and actions regarding Ag Eg coverage and position(s) have been pending since the partial retirement of [faculty] in 2017.

Using retired high school ag teachers as University Supervisors; 1 faculty member is chair of the school and now teaches 1 class in AgEd; so the bulk of the work for 37-38 student teachers falls on the AgEd faculty member who is 75% teaching/25% research

Even though housed in the college of education; CTE; they are well prepared in all areas of agriculture.

Staying current

Teacher candidates would normally spend 15-16 weeks of full-time student teaching; divided into two sections (4-5 weeks in the Fall and 10-11 weeks in the Winter). Because of COVID; this year they remained at student teaching sites or traveled home to tea

We offer co-enrollment with Wilkes Community College to address some of the content courses for Agriculture Education.

Our students can begin at regional campuses and then transition to the main campus their "junior" year. The majority of our Ag Ed students begin at a regional campus devoted to agriculture. The admission requirements are different for students at regional

Appropriate virtual teaching techniques; modern CASE lab simulations for teacher prep.

PPAT (ETS) is required for licensure. We must integrate a lot of PPAT preparation into our methods courses and also the Student Teaching Seminar has now become mostly PPAT focused.

[Faculty] recently retired. We cannot currently hire additional faculty due to a hiring freeze.

13 month cohort program with other non ag ed pres-service candidates.

In fall of 2020 we added an agricultural education teaching certificate program to our college which is a post-baccalaureate program for students who wish to "add on" a teaching certificate while completing their BS degree in an AFNR related major.

The program is being shut down due to lack of enrollment and closing of the program in our Education department; which supported the Ag. Education program.

We have had 100% pass rate on agriculture teacher certification exam for the past 19 years

The Ag Science majors in the Nevada Teach program earn a complete Bachelor of Science in Agriculture Science from our College of Agriculture; Biotechnology; & Natural Resource while simultaneously earning a Bachelor of Science in Secondary Education from o

We have a separate unit on campus; the Council on Teacher Education; to whom we get guidance; submit reports; etc. We do not work with the College of Education; even though that is sort of where CoTE is housed.

Beginning in 2022; student teaching will be full-semester. We are engaged in a 360 degree look at our program regarding DEI. The University Teacher Education core is being revised for first time in 20 years.

The College of Education funds student teaching supervision; so parameters regarding distance to placements are difficult to overcome when students choose to attend from a long distance away.

Funding - we would like to add faculty to Agricultural Education; but have been in a hiring freeze for the past two years.

Finding qualified schools; by the State Leadership; near the university to place the student teachers.

Under enrollment in Ag Ed courses is our biggest challenge.

Beginning in 2022 we will have an ag ed licensure program at the BS level. We will also maintain the MS degree program for the foreseeable future.

New Facilities opened Fall 2020 tripling in-person capacity; just in time for COVID-19 to reduce in-person capacity.

Our state has moved to year long student teaching experiences. Due to the fact that we place students across the state; we have been given a waiver for full year student teaching; but our students have to complete 200 hours of clinical experiences during

In the process of adding a graduate (MEd) teacher licensure option (TLO) in Ag Ed which will be available primarily to those seeking alternative access routes to licensure.

Too many students and too few faculty. Each faculty member advises over 70 students and teaches over-loaded classes.

None

Field experience is becoming difficult as schools are not allowing outside people into the district(s) with the pandemic. There are little to no resources available in the form of videos of teachers teaching for them to watch for observation hours.

We are hiring more part time lecturers to keep abreast of our increasing enrollment.

Recruitment is going to take a hit because we have been unable to interact with high school students at FFA events.

The majority of our students transfer to the institution. Depending on the Community college they may already have credit for the articulated Intro to Ag Ed Course. This means they spend three semesters with us before heading out to student teach. This

We are rural; Internet access to students' homes and local K-12 schools is spotty at best.

We are seeing a divide in our state as a whole in values rural conservative/urban liberal. As an institution (the whole University) we are seen as liberal. This perception is impacting our ability to convince students from our rural areas to come and stu

Our students double major in Education and an Agriculture Concentration. The agriculture students many times feel the Education faculty do not understand the Agriculture classroom. All agriculture placement and supervision and well as Agriculture methods

In the fall they "co-teach" at their student teaching site for two days a week. They call that Residency I. In the spring its every day (Residency II). Our students also have to endure and pass edTPA; which is scored by someone outside our university.

Currently the College of Education has Agricultural Education within the Science group. Until enough students warrant a separate section for Methods courses; students are enrolled within the general science methods courses within the Terrapin Teacher model

State standards appear more rigid toward the individual university than toward the individual school district. For example a student may not meet all requirements to student teach; but they may still be able to get a job in teaching.

We have worked very hard to align with our School of Education's secondary credential program (California is 5th year) and we were recently awarded a full 7 year (max possible) accreditation from our California Commission on Teacher Credentialing with not

Attracting more Ag Ed students to be more effective at student-instructor interactions.

The greatest challenge regarding efforts to produce licensed Agricultural Educators are the barriers of admission to Licensure programs such as ACT Score Requirements. This requirement keeps interested/ capable candidates from pursuing the license.

our PhD is interdisciplinary and is offered through the College (AFLS); with an AECT concentration.

Third clinical and student teaching are performed at the same site; giving the pre-service teachers a year-long cycle at the same site. EdTPA has been suspended due to COVID-19.

Appendix F -- Annual Executive Summaries: 2017-2019

National Agricultural Education Supply & Demand Study

Amy R. Smith, Rebecca G. Lawver, and Daniel D. Foster
Contributions by: Ellen C. Thompson, National Teach Ag Campaign

2017 Executive Summary

Since 1965, the National Agricultural Education Supply and Demand Study has been sanctioned and sponsored by the American Association for Agricultural Education (AAAE). In 2014, Drs. Daniel Foster (Pennsylvania State University), Rebecca G. Lawver (Utah State University), and Amy R. Smith (University of Minnesota) were selected to conduct the national agriculture teachers' supply and demand research. This document is a summary of findings from the fourth year (2017) of data collection.

Need for the Project

Numerous challenges facing school-based agricultural education include, but are not limited to, student enrollment, funding, and obtaining licensed teachers (Smith, Foster, Lawver, 2017). Changing licensure requirements, societal perceptions of the teaching profession, and the lack of diversity among teacher candidates contribute to challenges for agriculture teacher preparation programs.

With compounding challenges, stakeholders in agricultural education must engage in ongoing and continuous research to determine the best course of action to meet demand. Current, accurate agriculture teacher supply and demand information allows for meaningful, data-driven policy decisions at all levels.

Data Collection/Methods

Following the collection of 2016 supply and demand data, efforts were made to refine the data collection process, incorporating operational definitions when needed and customizing validation settings to reduce the occurrence of mathematical errors in data entry. Teacher educators at institutions with Agricultural Education teacher preparation programs were contacted for supply data, while state supervisors/executive secretaries were contacted for demand data. In each case, an online instrument was distributed via email using Qualtrics. Multiple follow-up contacts were made to each non-respondent and alternate contacts in some cases. Both supply and demand instruments were distributed in September to elicit more accurate data regarding program completer employment.

Supply of Agriculture Teachers

A total of 90 teacher education programs provided supply data, resulting in an 89% response rate (n=101). Hawaii, Maine, Rhode Island, Vermont, and the Virgin Islands currently have no existing Agricultural Education teacher preparation programs.

Of the 740 license-eligible program completers reported in 2017, 536 were undergraduate completers, 51 post-baccalaureate program completers, and 65 graduate program completers. An additional 89 individuals completed licensure only. Table 1 outlines the post graduation employment plans of the 2016 license-eligible program completers as reported.

Table 1. Employment plans of license-eligible program completers (n=740)

Source	*f*	%
SBAE in-state	495	66.3
SBAE out-of-state	61	8.2
Graduate school	46	6.2
Agribusiness	33	4.4
Unknown to teacher educator	28	3.7
Teaching another subject	23	3.0
Other	22	2.0
Extension	15	2.0
Unemployed	9	1.2
Production agriculture	5	0.7
Military	3	0.4

**Note: Numbers as reported by state contacts.*

Teacher educators indicated that of the license-eligible program completers, 506 (69%) were female and 234 (31%) were male. Nearly 86.3% of all license-eligible program completers were reported as White, Non Hispanic, with 5.2% Hispanic/Latino, 1.5% African American, 0.4% American Indian/Alaskan, 0.2% Bi-racial/Multi-racial, 0.2% Asian, and 0.2% Native Hawaiian/Other Pacific Islander. Teacher educators reported Other or Unknown ethnicity for approximately 4.8% of license-eligible program completers.

Demand for Agriculture Teachers

A total of 49 states provided demand data, resulting in a 94% response rate (N=52). Puerto Rico, Vermont and the Virgin Islands were unable to provide demand data.

As of September 15, 2017, state supervisors reported a total of 8,471 school-based agricultural education programs employing 12,690 teachers. Of the total number of teachers, 1834 (14%) were considered new hires in school-based agricultural education (SBAE). Table 2 identifies the source of new hires, according to data reported.

Table 2. Source of new hires in SBAE (n=1834)

Source	*f*	%
Licensed ag teacher (moved to new school)	542	29.6
Newly licensed undergraduate (prepared in-state)	357	19.5
Alternative licensure route completer	356	19.4
Unknown	253	13.8
Non-licensed individual	106	5.8
Newly licensed graduate (prepared in-state)	101	5.5
Newly licensed undergraduate (prepared out-of-state)	64	3.5
Other	37	2.0
Newly licensed graduate (prepared out-of-state)	18	1.0

Prior educational/employment experience was reported for non-licensed individuals hired to teach school-based agricultural education in 2017-2018. In total, 45 were graduates of an agriculture program, 1 was a graduate of an education program, 26 were from agribusiness, farming, or industry, 15 were from other areas of education, 1 was a retired teacher returning to the classroom and 1 was a graduate outside of agriculture or education.

Additional teachers were still needed to meet demand in SBAE; state supervisors reported 72 full time and 4 part-time vacancies as of September 15, 2017. Further, substantial growth and expansion in school-based agricultural education occurred in 2017-2018 with 216 new positions and 189 new programs added.

Despite program growth, 27 states reported a loss of programs or positions. A total of 71.7 positions were lost and 52 programs closed. Respondents reported a total of 702 school-based agricultural educators who taught in the 2016-2017 school year would not be returning to the classroom in 2017-2018. Table 3 identifies their reasons for leaving, if known.

Table 3. Reported reasons for leaving SBAE (n=702)

Source	*f*	%
Retirement	158	22.5
Employed in business/industry	128	18.2
Not offered a contract/terminated	93	13.2
Employed in another educational content area (outside of Ag Ed)	67	9.5
Employed in school administration	41	5.8
Stay at home parent/caregiver	38	5.4
Moved out of state (still teaching Ag)	34	4.8
Unknown	28	4.0
Continuing education/grad school	22	3.1
Employed in production agriculture/farming	21	3.0
Employment in extension/non-formal education	21	3.0
Employed in postsecondary education	15	2.1
Other	12	1.7
Health	11	1.6
Ag Ed state staff	9	1.3
Death	2	0.3
Employed in adult education/FBM	2	0.3

Future Plans

In addition to this annual summary document, a comprehensive report compiling 2014-2016 data will be published and disseminated to the profession in 2018. Continued collaboration with the American Association for Agricultural Education, the National Association of Agricultural Educators, Teach Ag Campaign, National Association of Supervisors of Agricultural Education, National FFA and Local Program Success Specialists will enable successful supply and demand data collection through 2020.

Recommended Citation

Smith, A. R., Lawver, R. G., & Foster, D. D. (2018). *National Agricultural Education Supply and Demand Study, 2017 Executive Summary.* Retrieved from:http://aaaeonline.org/Resources/Documents/NSD2016Summary.pdf

References

Smith, A. R., Lawver, R. G., & Foster, D. D. (2017). *National Agricultural Education Supply and Demand Study, 2016 Executive Summary.* Retrieved from:http://aaaeonline.org/Resources/Documents/NSD2016Summary.pdf

For questions or concerns regarding this study, please email nsd@aaaeonline.org.

National Agricultural Education Supply & Demand Study

Amy R. Smith, Rebecca G. Lawver, and Daniel D. Foster

Contributions by: Ellen C. Thompson, National Teach Ag Campaign

2018 Executive Summary

Since 1965, the National Agricultural Education Supply and Demand Study has been sanctioned and sponsored by the American Association for Agricultural Education (AAAE). In 2014, Drs. Daniel Foster (Pennsylvania State University), Rebecca G. Lawver (Utah State University), and Amy R. Smith (University of Minnesota) were selected to conduct the national agriculture teachers' supply and demand research. This document is a summary of findings from the fifth year (2018) of data collection.

Need for the Project

Numerous challenges face school-based agricultural education including, but not limited to, student enrollment, funding, and the availability of licensed teachers (Smith, Foster, Lawver, 2017). Additionally, changing licensure requirements, fiscal implications of the teaching profession, and the lack of a diverse pool of teacher candidates create challenges for agriculture teacher preparation programs.

Given the compounding challenges, stakeholders in agricultural education need ongoing and continuous research to determine the best course of action to meet demand. Current, accurate agriculture teacher supply and demand information allows for meaningful, data-driven policy decisions at all levels.

Data Collection/Methods

Since 2014, consistent efforts have been made to refine the data collection process, and improve the quality of data collected. Teacher educators at institutions with Agricultural Education teacher preparation programs were contacted for supply data, while state supervisors/executive secretaries were contacted for demand data. In each case, an online instrument was distributed via email using Qualtrics. Multiple follow-up contacts were made to each non-respondent and alternate contacts in some cases. Both supply and demand instruments were distributed in September to elicit more accurate data regarding program completer employment. Ultimately, the data reported is only as accurate as the data provided by respondents. While the supply and demand team has made every effort to identify errors and verify, there continue to be periodic issues with data entry and reporting resulting in inconsistencies in the final summary reports.

Supply of Agriculture Teachers

A total of 90 teacher education programs provided supply data, resulting in an 89% response rate (n=101). Hawaii, Maine, Rhode Island, Vermont, and the Virgin Islands currently have no existing Agricultural Education teacher preparation programs.

Of the 873 license-eligible program completers reported in 2018, 630 were undergraduate completers, 86 post-baccalaureate program completers, and 98 graduate program completers. An additional 59 individuals completed licensure only. Table 1 outlines post-graduation employment plans of the 2018 license-eligible program completers as reported.

Table 1. Employment plans of license-eligible program completers (n=873)

Source	*f*	%
SBAE in-state	584	66.9
Graduate school	81	9.2
SBAE out-of-state	70	8.0
Agribusiness	42	4.8
Teaching another subject	28	3.2
Unknown to teacher educator	17	1.9
Other	16	1.8
Extension	15	1.7
Production agriculture	13	1.5
Unemployed	7	.80
Military	0	0.0

Teacher educators indicated that of the license-eligible program completers, 6236 (71%) were female and 250 (29%) were male. Nearly 90.1% of all license-eligible program completers were reported as White, Non-Hispanic, with 5.0% Hispanic/Latino, 0.6% African American, 0.3% American Indian/Alaskan, 0.9% Bi-racial/Multi-racial, 0% Asian, and 0.9% Native Hawaiian/Other Pacific Islander. Teacher educators reported Other or Unknown ethnicity for approximately 2.6% of license-eligible program completers.

Demand for Agriculture Teachers

A total of 51 states provided demand data, resulting in a 98% response rate (N=52). Vermont was unable to provide the requested demand data.

As of September 15, 2018, state supervisors reported 9,071 school-based agricultural education programs employing 13,827 teachers. Of the total, 1594 (11.5%) teachers were considered new hires in school-based agricultural education (SBAE). Table 2 identifies the source of new hires, according to data reported.

Table 2. Source of new hires in SBAE (n=1594)

Source	*f*	%
Licensed ag teacher (moved to new school)	443	27.8
Newly licensed undergraduate (prepared in-state)	418	26.2
Alternative licensure route completer	363	22.8
Unknown	45	2.8
Non-licensed individual	111	7.0
Newly licensed graduate (prepared in-state)	118	7.4
Newly licensed undergraduate (prepared out-of-state)	66	4.1
Other	14	0.9
Newly licensed graduate (prepared out-of-state)	16	1.0

Prior educational/employment experience was reported for non-licensed individuals hired to teach school-based agricultural education in 2018-2019. In total, 33 were graduates of an agriculture program, 8 was a graduate of an education program, 18 were from agribusiness, farming, or industry, 15 were from other areas of education, 2 was a retired teacher returning to the classroom and 13 were graduates outside of agriculture or education. We acknowledge this totals 91, as opposed to 111 as reported. Prior experience was not provided for 20 individuals.

Additional teachers were still needed to meet demand in SBAE; state supervisors reported 61 full time and 10 part-time vacancies as of September 15, 2018. Further, substantial growth and expansion in school-based agricultural education occurred in 2017-2018 with 247 new positions and 140 new programs added.

Despite growth, 23 states lost programs or positions. A total of 88 positions were lost and 45 programs closed. Respondents reported that 868 school-based agricultural educators who taught in the 2017-2018 school year would not be returning to the classroom in 2018-2019. Table 3 identifies their reasons for leaving.

Table 3. Reported reasons for leaving SBAE (n=900)

Source	*f*	%
Retirement	223	24.8
Employed in business/industry	164	18.2
Not offered a contract/terminated	91	10.1
Employed in another educational content area (outside of Ag Ed)	75	8.3
Employed in school administration	71	7.8
Unknown	65	7.2
Stay at home parent/caregiver	62	6.9
Moved out of state (still teaching Ag)	32	3.6
Employed in production agriculture/farming	30	3.3
Employed in postsecondary education	19	2.1
Continuing education/grad school	17	1.9
Health	16	1.8
Employment in extension/non-formal education	13	1.4
Other	7	0.8
Ag Ed state staff	7	0.8
Death	6	0.7
Employed in adult education/FBM	2	0.2

Future Plans

The current project team will continue data collection for the National Supply and Demand Study through 2020. Continued collaboration with the American Association for Agricultural Education, the National Association of Agricultural Educators, Teach Ag Campaign, National Association of Supervisors of Agricultural Education, National FFA and Local Program Success Specialists will enable successful supply and demand data collection.

Recommended Citation

Smith, A. R., Lawver, R. G., & Foster, D. D. (2019). *National Agricultural Education Supply and Demand Study, 2018 Executive Summary*. Retrieved from: http://aaaeonline.org/Teacher-Supply-and-Demand

References

Smith, A. R., Lawver, R. G., & Foster, D. D. (2017). *National Agricultural Education Supply and Demand Study, 2016 Executive Summary*. Retrieved from:http://aaaeonline.org/Resources/Documents/NSD2016Summary.pdf

For questions or concerns regarding this study, please email nsd@aaaeonline.org.

National Agricultural Education Supply & Demand Study

Daniel D. Foster, Rebecca G. Lawver, and Amy R. Smith
Contributions by: Ellen C. Thompson, National Teach Ag Campaign

2019 Executive Summary

Since 1965, the National Agricultural Education Supply and Demand Study has been sanctioned and sponsored by the American Association for Agricultural Education (AAAE). In 2014, Drs. Daniel Foster (Pennsylvania State University), Rebecca G. Lawver (Utah State University), and Amy R. Smith (University of Minnesota) were selected to conduct the national agriculture teachers' supply and demand research. This document is a summary of findings from the sixth year (2019) of data collection.

Need for the Project

Numerous challenges facing school-based agricultural education include, but are not limited to, student enrollment, funding, and obtaining licensed teachers (Smith, Foster, Lawver, 2017). Changing licensure requirements, fiscal implications of the teaching profession, and the lack of a diverse pool of teacher candidates create challenges for agriculture teacher preparation programs.

With compounding challenges, stakeholders in agricultural education need ongoing and continuous research to determine the best course of action to meet demand. Current, accurate agriculture teacher supply and demand information allows for meaningful, data-driven policy decisions at all levels.

Data Collection/Methods

Teacher educators at institutions with Agricultural Education teacher preparation programs were contacted for supply data, while state supervisors/executive secretaries were contacted for demand data. In each case, an online instrument was distributed via email using Qualtrics. Multiple follow-up contacts were made to each non-respondent and alternate contacts in some cases. Both supply and demand instruments were distributed in September to elicit more accurate data regarding program completer employment.

Supply of Agriculture Teachers

A total of 95 teacher education programs provided supply data, resulting in an 89% response rate (n=107). Hawaii, Maine, Rhode Island, Vermont, and the Virgin Islands currently have no existing Agricultural Education teacher preparation programs.

Of the 904 license-eligible program completers reported in 2019, 731 were undergraduate completers, 51 post-baccalaureate program completers, and 77 graduate program completers. An additional 45 individuals completed licensure only. Table 1 outlines the post graduation employment plans of the 2019 license-eligible program completers as reported.

Table 1. Employment plans of license-eligible program completers (n=904)

Source	*f*	%
SBAE in-state	626	69.2
SBAE out-of-state	74	8.2
Graduate school	51	5.6
Agribusiness	56	6.2
Unknown to teacher educator	18	2.0
Teaching another subject	32	3.5
Other	16	1.8
Extension	15	1.6
Unemployed	7	0.8
Production agriculture	7	0.8
Military	2	0.2

**Note: Numbers as reported by state contacts.*

Teacher educators indicated that of the license-eligible program completers, 668 (74%) were female and 236 (26%) were male. Nearly eighty-seven percent of all license-eligible program completers were reported as White, Non-Hispanic, with 4.0% Hispanic/Latino, 0.8% African American, 0.7% American Indian/Alaskan, 0.6% Bi-racial/Multi-racial, and 0.4% Asian. Teacher educators reported Other or Unknown ethnicity for approximately 6.3% of license-eligible program completers.

Demand for Agriculture Teachers

A total of 47 states provided demand data, resulting in a 90% response rate (N=52). Georgia, Rhode Island, Vermont, the Virgin Islands, and West Virginia were unable to provide demand data.

As of September 15, 2019, state supervisors reported a total of 8504 school-based agricultural education programs employing 13189.5 teachers. Of the total number of teachers, 1420 (10.7%) were considered new hires in school-based agricultural education (SBAE).

Table 2 identifies the source of new hires, according to data reported.

Table 2. Source of new hires in SBAE (n=1420)

Source	*f*	%
Licensed ag teacher (moved to new school)	400	28.2
Newly licensed undergraduate (prepared in-state)	391	27.5
Alternative licensure route completer	235	16.5
Non-licensed individual	141	9.9
Unknown	89	6.3
Newly licensed graduate (prepared in-state)	79	5.6
Newly licensed undergraduate (prepared out-of-state)	60	4.2
Other	19	1.3
Newly licensed graduate (prepared out-of-state)	6	0.4

Prior educational/employment experience was reported for non-licensed individuals hired to teach school-based agricultural education in 2019-2020. In total, 41 were graduates of an agriculture program, 51 were from agribusiness, farming, or industry, 26 were from other areas of education, and 11 were graduates outside of agriculture or education.

Additional teachers were still needed to meet demand in SBAE; state supervisors reported 60 full time and 3 part-time vacancies as of September 15, 2019. Further, substantial growth and expansion in school-based agricultural education occurred in 2019-2020 with 224 new positions and 156 new programs added.

Despite program growth, 28 states reported a loss of programs or positions. A total of 70 positions were lost and 36 programs closed. Respondents reported a total of 605 school-based agricultural educators who taught in the 2018-2019 school year would not be returning to the classroom in 2019-2020. Table 3 identifies their reasons for leaving, if known.

Table 3. Reported reasons for leaving SBAE (n=605)

Source	*f*	%
Retirement	149	24.6
Employed in business/industry	76	12.6
Not offered a contract/terminated	71.8	11.9
Unknown	65	10.7
Employed in another educational content area (outside of Ag Ed)	63	10.4
Employed in school administration	33	5.5
Moved out of state (still teaching Ag)	24	4.0
Employed in production agriculture/farming	23	3.8
Stay at home parent/caregiver	21	3.5
Other	21	3.5
Continuing education/grad school	16	2.6
Employment in extension/non-formal education	12	2.0
Employed in postsecondary education	10	1.7
Health	10	1.7
Ag Ed state staff	6	1.0
Death	3	0.5
Employed in adult education/FBM	1	0.2

Future Plans

In addition to this annual summary document, a more comprehensive report compiling 2017-2019 data will be published and disseminated to the profession in 2020. Continued collaboration with the American Association for Agricultural Education, the National Association of Agricultural Educators, Teach Ag Campaign, National Association of Supervisors of Agricultural Education, National FFA and Local Program Success Specialists will enable successful supply and demand data collection through 2020.

Recommended Citation

Foster, D. D., Lawver, R. G., & Smith, A. R., (2020). *National Agricultural Education Supply and Demand Study, 2019 Executive Summary.* Retrieved from:http://aaaeonline.org/Resources/Documents/NSD2019Summary.pdf

References

Smith, A. R., Lawver, R. G., & Foster, D. D. (2017). *National Agricultural Education Supply and Demand Study, 2016 Executive Summary.* Retrieved from:http://aaaeonline.org/Resources/Documents/NSD2016Summary.pdf

For questions or concerns regarding this study, please email nsd@aaaeonline.org.

Appendix G – Historical Response Rates

Supply Survey

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
Institutions	90	95	101	89	90	95	89	80	86
Supply Frame	103	99	101	100	102	107	106	107	104
Response Rate	87%	96%	100%	89%	88%	89%	84%	75%	83%

Demand Survey

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022
States Reporting	46	50	49	47	51	47	47	41	46
Demand Frame	51	52	52	52	52	52	52	52	52
Response Rate	90%	96%	94%	90%	98%	90%	90%	79%	88%

Appendix H – Degrees Granted by Institution (2020)

A summary can be found in Table 14.

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
Southern	Alabama	Auburn University	X	X	X	X	X					
Western	Arizona	University of Arizona	X	X								
Southern	Arkansas	Arkansas State University	X	X								
Southern	Arkansas	Arkansas Tech University		X								
Southern	Arkansas	Southern Arkansas University		X								
Southern	Arkansas	University of Arkansas	X	X		X						
Western	California	California Polytechnic State University; San Luis Obispo	X	X								
Western	California	California State University; Chico	X	X								
Western	California	California State University; Fresno	X	X								
Western	California	University of California; Davis		X								
Western	Colorado	Colorado State University	X	X								
NC	Connecticut	University of Connecticut	X	X								
NC	Delaware	Delaware State University		X								
Southern	Florida	University of Florida	X	X		X						
Southern	Georgia	Abraham Baldwin Agricultural College		X								
Southern	Georgia	Fort Valley State University		X								
Southern	Georgia	University of Georgia		X		X				X		
Western	Idaho	University of Idaho	X	X								
NC	Illinois	Illinois State University	X	X								
NC	Illinois	Southern Illinois University	X	X		X						
NC	Illinois	Western Illinois University		X								
NC	Indiana	Huntington University		X								
NC	Indiana	Purdue University	X	X	X					X		
NC	Iowa	Dordt University		X								
NC	Iowa	Iowa State University	X	X								
NC	Iowa	Morningside University		X								
NC	Kansas	Fort Hays State University	X	X		X						
NC	Kansas	Kansas State University	X			X						
Southern	Kentucky	Eastern Kentucky University	X	X		X						
Southern	Kentucky	Morehead State University		X						X		
Southern	Kentucky	Murray State University	X	X		X						
Southern	Kentucky	University of Kentucky	X	X								
Southern	Kentucky	Western Kentucky University	X	X								

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
Southern	Louisiana	Louisiana State University	X	X		X						
NC	Maryland	University of Maryland	X	X								
NC	Maryland	University of Maryland Eastern Shore	X									
NC	Michigan	Michigan State University	X	X								
NC	Minnesota	Southwest Minnesota State University		X								
NC	Minnesota	University of Minnesota Crookston		X								
NC	Minnesota	University of Minnesota-Twin Cities	X	X		X						X
Southern	Mississippi	Alcorn State University	X	X								
Southern	Mississippi	Mississippi State University	X	X		X						
NC	Missouri	College of the Ozarks		X								
NC	Missouri	Missouri State University	X	X		X						
NC	Missouri	Northwest Missouri State University	X	X								
NC	Missouri	University of Central Missouri	X	X		X			X			
NC	Missouri	University of Missouri	X	X		X						
Western	Montana	Montana State University	X	X								
NC	Nebraska	University of Nebraska	X	X								
Western	Nevada	University of Nevada - Reno										
NC	New Jersey	Rutgers University	X	X								
Western	New Mexico	Eastern New Mexico University		X								
Western	New Mexico	New Mexico State University	X	X								
NC	New York	Cornell University								X		
Southern	North Carolina	Appalachian State University	X	X								
Southern	North Carolina	Brevard College		X								
Southern	North Carolina	North Carolina A&T State University	X	X								
Southern	North Carolina	North Carolina State University	X	X		X						
Southern	North Carolina	University of Mount Olive		X								
NC	North Dakota	North Dakota State University	X	X		X						
NC	Ohio	Central State University		X								
NC	Ohio	The Ohio State University	X	X		X						
NC	Ohio	Wilmington College	X	X								
Southern	Oklahoma	Northwestern Oklahoma State University		X								
Southern	Oklahoma	Oklahoma State University	X	X		X						X
Western	Oregon	Oregon State University	X									
NC	Pennsylvania	Pennsylvania State University	X	X	X	X						

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
Southern	South Carolina	Clemson University	X	X								
NC	South Dakota	South Dakota State University	X	X								
Southern	Tennessee	Middle Tennessee State University	X	X								
Southern	Tennessee	Tennessee State University	X	X								
Southern	Tennessee	The University of Tennessee	X	X								
Southern	Tennessee	University of Tennessee-Martin		X								
Southern	Texas	Sam Houston State University		X								
Southern	Texas	Stephen F. Austin State University		X								
Southern	Texas	Sul Ross State University		X								
Southern	Texas	Tarleton State University	X	X								
Southern	Texas	Texas A&M University	X	X	X	X	X	X				
Southern	Texas	Texas A&M University-Kingsville	X	X								
Southern	Texas	Texas State University		X								
Southern	Texas	Texas Tech University	X	X	X	X						
Southern	Texas	West Texas A&M University	X	X		X						
Western	Utah	Southern Utah University		X				X				
Western	Utah	Utah State University		X		X		X				X
Southern	Virginia	Ferrum College		X								
Southern	Virginia	Virginia Tech	X	X		X						
NC	West Virginia	West Virginia University	X	X		X						X
NC	Wisconsin	University of Wisconsin - River Falls	X	X								

Appendix I – Historical Reporting of Teachers and Program Completers

AAAE supply and demand reports beginning in 1965 provide a table similar to the one below. We present the data here to provide a historical perspective for this study. Historical charts are created from these data.

Year	Total Number of Positions	Reference	No Newly Qualified to Teach	Newly Qualified Teachers Teaching Agriculture	Percent of Newly Qualified Teaching Agriculture
1918	895	Federal Board*			
1919	1201	Federal Board*			
1920	1516	Federal Board*	444		
1921	2071	Federal Board*	283		
1922	2280	Federal Board*			
1923	3012	Federal Board*			
1924	3364	Federal Board*			
1926	3600	Magill, 1929			
1930	3525	Pearson, 1931			
1935	5326	Linke, 1935			
1936	5579	Swanson, 1942	984		
1937	5947	Swanson, 1942	1237		
1938	6925	Swanson, 1942	1508		
1939	7686	Swanson, 1942	1688		
1940	8309	Swanson, 1942	1774		
1965	10378	Camp, 1998	1038	671	64.6
1966	10325	Camp, 1998	1151	701	60.9
1967	10221	Camp, 1998	1233	742	60.2
1968	10606	Camp, 1998	1314	809	61.6
1969	10560	Camp, 1998	1566	891	56.9
1970	10520	Camp, 1998	1700	866	50.9
1971	10438	Camp, 1998	1743	864	49.6
1972	10716	Camp, 1998	1759	964	54.8
1973	11141	Camp, 1998	1713	966	56.4
1974	11578	Camp, 1998	1623	943	58.1
1975	12107	Camp, 1998	1660	999	60.2
1976	12486	Camp, 1998	1697	1043	61.5
1977	12694	Camp, 1998	1749	1063	60.8
1978	12844	Camp, 1998	1791	1015	56.7
1979	12772	Camp, 1998	1656	909	54.9
1980	12510	Camp, 1998	1584	824	52.0
1981	12450	Camp, 1998	1468	766	52.2

Year	Total Number of Positions	Reference	No Newly Qualified to Teach	Newly Qualified Teachers Teaching Agriculture	Percent of Newly Qualified Teaching Agriculture
1982	12474	Camp, 1998	1368	702	51.3
1983	12099	Camp, 1998	1277	582	45.6
1984	11960	Camp, 1998	1249	565	45.2
1985	11687	Camp, 1998	1207	492	40.8
1986	11582	Camp, 1998	964	397	41.2
1987	11204	Camp, 1998	952	396	41.6
1988	11072	Camp, 1998	838	356	42.5
1989	10840	Camp, 1998	588	311	52.9
1990	10356	Camp, 1998	625	331	53.0
1991	10176	Camp, 1998	638	325	50.9
1992	9981	Camp, 1998	686	366	53.4
1993	10118	Camp, 1998	636	345	54.2
1994	10234	Camp, 1998	643	362	56.3
1995	10164	Camp, 1998	625	376	60.2
1996	10297	Kantrovich, 2010	716	Not Collected	
1997	10532	Kantrovich, 2010	657	Not Collected	
1998	10706	Kantrovich, 2010	748	477	63.8
1999	10915	Kantrovich, 2010	789		
2000	10996	Kantrovich, 2010	798	Not Collected	
2001	11189	Kantrovich, 2010	857	509	59.4
2002	5959	Kantrovich, 2010	690	Not Collected	
2003	6170	Kantrovich, 2010	749	Not Collected	
2004	9107	Kantrovich, 2010	781	570	73.0
2005	9282.5	Kantrovich, 2010	744	Not Collected	
2006	10846.5	Kantrovich, 2010	785	548	69.8
2007	9735.5	Kantrovich, 2010	593	Not Collected	
2008	10238.5	Kantrovich, 2010	583	Not Collected	
2009	10600	Kantrovich, 2010	649	457	70.4
2011	10132	Current Study	800	Not Collected	
2012	10400	Current Study	804	Not Collected	
2013	10112	Current Study	794	Not Collected	
2014	10802	Current Study	746	514	68.9
2015	11834	Current Study	733	505	68.9
2016	11557.5	Current Study	772	569	73.7
2017	12690	Current Study	723	539	74.6
2018	13827	Current Study	873	654	74.9
2019	13189.5	Current Study	904	700	77.4
2020	13254	Current Study	897	661	73.7

Year	Total Number of Positions	Reference	No Newly Qualified to Teach	Newly Qualified Teachers Teaching Agriculture	Percent of Newly Qualified Teaching Agriculture
2021	13349	Current Study	789	591	74.9
2022	14516	Current Study	854	671	78.6

* Federal Board for Vocational Education, 1921

Appendix J – Net Change to Programs by State

	Programs				Positions			
State/Year	Total	Lost	New	Net	Total	Lost	New	Net
Alabama	528	9	4	-5	630	9	5	-4
2020	278	6	4	-2	315	6	5	-1
2022	250	3		-3	315	3		-3
Alaska	12		6	6	8		2	2
2020	7		5	5	3		1	1
2022	5		1	1	5		1	1
Arizona	160	7	4	-3	224	9	7	-2
2020	80	2	1	-1	112	4	3	-1
2021		1		-1		1		-1
2022	80	4	3	-1	112	4	4	0
Arkansas	429	3	8	5	657	3	5	2
2021	216	2	2	0	324	2	2	0
2022	213	1	6	5	333	1	3	2
California	1041	2	19	17	2931	24	134	110
2020	343	0	2	2	988	9	29	20
2021	339	1	5	4	967	5	46	41
2022	359	1	12	11	976	10	59	49
Colorado	395	5	18	13	481	8	26	18
2020	128	1	7	6	149	1	8	7
2021	136	0	9	9	169	3	16	13
2022	131	4	2	-2	163	4	2	-2
Connecticut	62	0	5	5	382	2	12	10
2020	21		0	0	125		0	0
2021	20	0	0	0	129	2	7	5
2022	21		5	5	128		5	5
Delaware	123		9	9	225		7	7
2020	37		1	1	71		2	2
2021	41		4	4	75		0	0
2022	45		4	4	79		5	5
Florida	1127	8	6	-2	1603	12	9	-3
2020	383	1	0	-1	513	1	0	-1
2021	373	5	0	-5	537	6	0	-6
2022	371	2	6	4	553	5	9	4
Georgia	1124	9	49	40	1598	9	63	54
2020	364	4	20	16	511	2	20	18
2021	373	1	15	14	534	2	28	26
2022	387	4	14	10	553	5	15	10
Hawaii	12		2	2	12		0	0
2020	12		2	2	12		0	0

	Programs				Positions			
State/Year	Total	Lost	New	Net	Total	Lost	New	Net
Idaho	193	0	3	3	317	1	4	3
2020	97		2	2	155		2	2
2022	96	0	1	1	162	1	2	1
Illinois	1090	5	45	40	1453	7	94	87
2020	356	4	6	2	453	4	16	12
2021	359	1	6	5	480	1	32	31
2022	375	0	33	33	520	2	46	44
Indiana	707	4	14	10	1018	12	52	40
2020	230	3	4	1	321	7	22	15
2021	238	0	8	8	342	2	15	13
2022	239	1	2	1	355	3	15	12
Iowa	759	1	12	11	867	6	24	18
2020	249	0	2	2	285	1	8	7
2021	251	0	4	4	284	3	8	5
2022	259	1	6	5	298	2	8	6
Kansas	673	2	16	14	821	2	24	22
2020	220	1	7	6	269	1	6	5
2021	228	1	6	5	274	1	9	8
2022	225	0	3	3	278	0	9	9
Kentucky	533	6	20	14	901	9	34	25
2020	168	1	4	3	286	4	7	3
2021	178	2	7	5	302	2	16	14
2022	187	3	9	6	313	3	11	8
Louisiana	418	2	10	8	598	2	14	12
2021	202		4	4	298		4	4
2022	216	2	6	4	300	2	10	8
Maine	75		0	0	81		0	0
2020	75		0	0	81		0	0
Maryland	154	4	13	9	238	5	10	5
2020	54	1	4	3	78	1	5	4
2021	52	2	4	2	77	2	4	2
2022	48	1	5	4	83	2	1	-1
Massachusetts	36	1	0	-1	194	1	0	-1
2020	17	1	0	-1	87	1	0	-1
2022	19			0	107			0
Michigan	364	2	6	4	429	3	16	13
2020	116	1	0	-1	136	2	5	3
2021	123		3	3	143		8	8
2022	125	1	3	2	150	1	3	2
Minnesota	639	3	25	22	937	13	82	69
2020	202	2	7	5	291	3	17	14

	Programs				Positions			
State/Year	Total	Lost	New	Net	Total	Lost	New	Net
2021	211	0	8	8	315	1	32	31
2022	226	1	10	9	331	9	33	24
Mississippi	346	5	1	-4	414	4	1	-3
2020	116	1	1	0	141	1	1	0
2021	118	1	0	-1	139	1	0	-1
2022	112	3	0	-3	134	2	0	-2
Missouri	1100	0	9	9	1659	7	35	28
2020	364	0	4	4	546	2	7	5
2021	365	0	2	2	554	5	14	9
2022	371		3	3	559		14	14
Montana	306	3	4	1	349	3	16	13
2020	96	3	1	-2	106	3	3	0
2021	101		2	2	116		5	5
2022	109		1	1	127		8	8
Nebraska	611	1	12	11	703	1	20	19
2020	200		5	5	226		12	12
2021	202	1	1	0	229	1	2	1
2022	209		6	6	248		6	6
Nevada	84	1	2	1	120	1	1	0
2020	28		0	0	39		0	0
2021	28		1	1	40		0	0
2022	28	1	1	0	41	1	1	0
New Hampshire	25		0	0	51.5		0	0
2020	13		0	0	26.5		0	0
2022	12		0	0	25		0	0
New Jersey	131	1	0	-1	187	2	3	1
2020	44	0	0	0	62	1	1	0
2021	43	1	0	-1	61	1	0	-1
2022	44		0	0	64		2	2
New Mexico	252		8	8	342		11	11
2020	82		4	4	98			0
2021	83		0	0	111		3	3
2022	87		4	4	133		8	8
New York	710	1	44	43	1109	1	48	47
2020	222	1	8	7	350	1	7	6
2021	230		12	12	358		5	5
2022	258		24	24	401		36	36
North Carolina	1147	13	48	35	1671	24	67	43
2020	374	1	4	3	536	4	3	-1
2021	382	2	24	22	556	4	34	30
2022	391	10	20	10	579	16	30	14

	Programs				Positions			
State/Year	Total	Lost	New	Net	Total	Lost	New	Net
North Dakota	274	2	7	5	327	2	8	6
2020	90	1	2	1	104	1	3	2
2021	91	1	4	3	110	1	4	3
2022	93		1	1	113		1	1
Ohio	1029	3	15	12	1579	3	26	23
2020	342	3	5	2	527	2	7	5
2021	346	0	8	8	547	1	10	9
2022	341		2	2	505		9	9
Oklahoma	1095	1	6	5	1406	1	28	27
2020	365	1	4	3	456	1	2	1
2021	364		0	0	467		10	10
2022	366		2	2	483		16	16
Oregon	347	2	12	10	519	2	24	22
2020	118	1	3	2	161	1	6	5
2021	113	1	8	7	173	1	11	10
2022	116		1	1	185		7	7
Pennsylvania	521		3	3	757		15	15
2020	166		1	1	248		4	4
2021	181		2	2	251		4	4
2022	174		0	0	258		7	7
Rhode Island	4		0	0	8		0	0
2020	4		0	0	8		0	0
South Carolina	367	4	8	4	475	4	9	5
2020	113	3	3	0	150	3	4	1
2021	124	1	3	2	162	1	3	2
2022	130		2	2	163		2	2
South Dakota	209	2	4	2	219	2	4	2
2020	107	2	4	2	107	2	4	2
2021	102			0	112			0
Tennessee	685	3	10	7	1145	7	19	12
2020	225	2	2	0	368	4	3	-1
2021	229	1	2	1	364	2	6	4
2022	231	0	6	6	413	1	10	9
Texas	3230	0	16	16	7439	0	35	35
2020	1079	0	4	4	2500	0	10	10
2021	1082	0	12	12	2498	0	25	25
2022	1069	0	0	0	2441	0	0	0
Utah	282	1	5	4	520	4	18	14
2020	93	0	3	3	170	1	5	4
2021	94	1	1	0	175	1	6	5
2022	95	0	1	1	175	2	7	5

	Programs				Positions			
State/Year	Total	Lost	New	Net	Total	Lost	New	Net
Virgin Islands	14	5	1	-4	14	6	1	-5
2020	5		0	0	5		0	0
2021	5	2	1	-1	5	3	1	-2
2022	4	3	0	-3	4	3	0	-3
Virginia	660	2	8	6	955	2	9	7
2020	226		4	4	309		2	2
2021	208		1	1	316		5	5
2022	226	2	3	1	330	2	2	0
Washington	719	3	3	0	1230	19	3	-16
2020	250	2	0	-2	386	2	0	-2
2021	225	1	0	-1	357	4	0	-4
2022	244	0	3	3	487	13	3	-10
West Virginia	87		1	1	110		3	3
2022	87		1	1	110		3	3
Wisconsin	759	2	3	1	1018	2	12	10
2020	251	1	0	-1	324	1	2	1
2021	253	1	3	2	335	1		-1
2022	255			0	359		10	10
Wyoming	172		2	2	187		4	4
2020	56		0	0	59		0	0
2021	58		2	2	63		2	2
2022	58		0	0	65		2	2

Appendix K – Net Change 2020-2022 in Programs and Positions by State

	Positions				Programs			
State	2020	2021	2022	Net Change	2020	2021	2022	Net Change
Alabama	315		315	0	278		250	-28
Alaska	3		5	2	7		5	-2
Arizona	112		112	0	80		80	0
Arkansas		324	333			216	213	
California	988	967	976	-12	343	339	359	16
Colorado	149	169	163	14	128	136	131	3
Connecticut	125	129	128	3	21	20	21	0
Delaware	71	75	79	8	37	41	45	8
Florida	513	537	553	40	383	373	371	-12
Georgia	511	534	553	42	364	373	387	23
Hawaii	12				12			
Idaho	155		162	7	97		96	-1
Illinois	453	480	520	67	356	359	375	19
Indiana	321	342	355	34	230	238	239	9
Iowa	285	284	298	13	249	251	259	10
Kansas	269	274	278	9	220	228	225	5
Kentucky	286	302	313	27	168	178	187	19
Louisiana		298	300			202	216	
Maine	81				75			
Maryland	78	77	83	5	54	52	48	-6
Massachusetts	87		107	20	17		19	2
Michigan	136	143	150	14	116	123	125	9
Minnesota	291	315	331	40	202	211	226	24
Mississippi	141	139	134	-7	116	118	112	-4
Missouri	546	554	559	13	364	365	371	7
Montana	106	116	127	21	96	101	109	13
Nebraska	226	229	248	22	200	202	209	9
Nevada	39	40	41	2	28	28	28	0
New Hampshire	26.5		25	-1.5	13		12	-1
New Jersey	62	61	64	2	44	43	44	0
New Mexico	98	111	133	35	82	83	87	5
New York	350	358	401	51	222	230	258	36
North Carolina	536	556	579	43	374	382	391	17
North Dakota	104	110	113	9	90	91	93	3
Ohio	527	547	505	-22	342	346	341	-1
Oklahoma	456	467	483	27	365	364	366	1
Oregon	161	173	185	24	118	113	116	-2
Pennsylvania	248	251	258	10	166	181	174	8

Puerto Rico								
Rhode Island	8				4			
South Carolina	150	162	163	13	113	124	130	17
South Dakota	107	112			107	102		
Tennessee	368	364	413	45	225	229	231	6
Texas	2500	2498	2441	-59	1079	1082	1069	-10
Utah	170	175	175	5	93	94	95	2
Vermont								
Virgin Islands	5	5	4	-1	5	5	4	-1
Virginia	309	316	330	21	226	208	226	0
Washington	386	357	487	101	250	225	244	-6
West Virginia			110				87	
Wisconsin	324	335	359	35	251	253	255	4
Wyoming	59	63	65	6	56	58	58	2
	13253.5	13349	14516		8466	8367	8987	

Appendix XX – Net Change in Program Completers by State

State	2020	2021	2022	Net Change
Alabama	18	14	12	-6
Arizona	5	5	4	-1
Arkansas	29	19	25	-4
California	76	45	75	-1
Colorado	7	4	3	-4
Connecticut	9	2	8	-1
Delaware	2	1	1	-1
Florida	19	7	18	-1
Georgia	48	46	47	-1
Idaho	13		13	0
Illinois	22	29	32	10
Indiana	26	22	12	-14
Iowa	26	33	31	5
Kansas	30	25	27	-3
Kentucky	33	31	34	1
Louisiana	4	2	6	2
Maryland	1	3	0	
Michigan	6	4	8	2
Minnesota	16	19	16	0
Mississippi	10	8	10	0
Missouri	36	27	45	9
Montana	6	8	13	7
Nebraska	16	16	16	0

Nevada	5			
New Jersey	0	0	0	
New Mexico	8	11	6	-2
New York	7	12	20	13
North Carolina	63	37	40	-23
North Dakota	10	8	11	1
Ohio	30	24	19	-11
Oklahoma	40	32	28	-12
Oregon	9	7	9	0
Pennsylvania	8	17	16	8
South Carolina	9	5	4	-5
South Dakota	18	14	19	1
Tennessee	20	22	27	7
Texas	154	146	137	-17
Utah	18	20	13	-5
Virginia	7	7	6	-1
Washington		11	6	
West Virginia	9	12	10	1
Wisconsin	24	30	20	-4
Wyoming			7	

Appendix L – Program Completer Gender Breakdown by State 2020-2022

Gender breakdown omits non-binary, which is less than 0.1%. Gender percentage was computed on using the number of program completer's reported with a gender; unknown was excluded. 2014 data is provided for comparison purposes.

	2014		2020		2021		2022	
State	Female	Male	Female	Male	Female	Male	Female	Male
Alabama	36%	64%	67%	33%	79%	21%	50%	50%
Arizona	75%	25%	60%	40%	80%	20%	100%	0%
Arkansas	52%	48%	41%	59%	68%	32%	72%	28%
California	78%	22%	79%	21%	84%	16%	75%	25%
Colorado			86%	14%	100%	0%	67%	33%
Connecticut	100%	0%	67%	33%	100%	0%	75%	25%
Delaware	100%	0%	100%	0%	100%	0%	100%	0%
Florida	83%	17%	95%	5%	86%	14%	83%	17%
Georgia	30%	70%	71%	29%	80%	20%	60%	40%
Idaho	40%	60%	85%	15%			77%	23%
Illinois	69%	31%	91%	9%	62%	38%	78%	22%
Indiana	71%	29%	85%	15%	95%	5%	67%	25%
Iowa			81%	19%	76%	24%	68%	32%
Kansas	60%	40%	73%	27%	64%	36%	56%	44%
Kentucky	68%	32%	76%	24%	68%	32%	71%	29%
Louisiana	43%	57%	100%	0%	100%	0%	100%	0%
Maryland			100%	0%	100%	0%		
Michigan	100%	0%	67%	33%	75%	25%	100%	0%
Minnesota	67%	33%	81%	19%	74%	26%	81%	19%
Mississippi	29%	71%	70%	30%	75%	25%	70%	30%
Missouri	75%	25%	78%	22%	81%	19%	78%	22%
Montana	83%	17%	50%	50%	88%	13%	62%	38%
Nebraska	71%	29%	63%	38%	81%	19%	81%	19%
Nevada	100%	0%	80%	20%				
New Jersey								
New Mexico	60%	40%	88%	13%	36%	64%	50%	50%
New York	83%	17%	100%	0%	92%	8%	90%	10%
North Carolina	67%	33%	67%	33%	84%	16%	80%	20%
North Dakota	75%	25%	70%	30%	75%	25%	73%	27%
Ohio	30%	70%	83%	17%	71%	29%	84%	16%
Oklahoma	41%	59%	65%	35%	72%	28%	68%	32%
Oregon	78%	22%	89%	11%	71%	29%	89%	11%
Pennsylvania	69%	31%	75%	25%	82%	18%	75%	25%
Puerto Rico	67%	33%						
South Carolina	55%	45%	67%	33%	50%	50%	75%	25%

	2014		2020		2021		2022	
State	Female	Male	Female	Male	Female	Male	Female	Male
South Dakota	40%	60%	83%	17%	57%	43%	68%	32%
Tennessee	89%	11%	70%	30%	82%	18%	67%	33%
Texas	68%	32%	78%	22%	71%	29%	80%	20%
Utah	40%	60%	61%	39%	80%	20%	85%	15%
Virginia	56%	44%	86%	14%	71%	29%	50%	50%
Washington	100%	0%			91%	9%	83%	17%
West Virginia	56%	44%	78%	22%	83%	17%	80%	20%
Wisconsin	73%	27%	75%	25%	77%	23%	90%	10%
Wyoming	50%	50%					57%	43%

Appendix M– Instruments Used in this Study

2020 National Supply Instrument

2020 NSD Supply Survey

Q1
Thank you for agreeing to participate in the National Ag Ed Supply and Demand Project. Your responses are very important to us. The information you provide will be helpful in assessing, and addressing, the current shortage of agriculture teachers we face across the nation. Information will be shared among agricultural education family organizations, including AAAE, NAAE, NASAE, and the National FFA Organization. National Teach Ag Campaign staff will collaborate with our team in producing and disseminating national, regional, and state profiles based upon the data gathered.

Your participation in this research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Should you choose to withdraw, you may email the research team at nsd@aaaeonline.org.

Research records will be kept confidential, consistent with federal and state regulations. The Institutional Review Board for the protection of human participants at Pennsylvania State University has approved this research study, IRB#45604. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at 814-865-1775 or email tkahler@psu.edu to obtain information or to offer input.

Q2 Section 1: Annual Supply Data

This instrument is designed to collect information regarding students pursuing teacher licensure in Agricultural Education at your institution. For the first five items, please consider only the 2019-2020 program completers (those who fulfilled licensure requirements between August 2019 and August 2020).

Q3 How many total program completers (those who have fulfilled licensure requirements) in Agricultural Education were produced by your program in the 2019-2020 academic year?

_____

Q4 As of September 15, 2020, please indicate confirmed and/or intended employment plans for 2019-2020 program completers.
Note: The total must equal the number of licensed, program completers reported in the preceding question.

Teaching school-based agriculture in this state	
Teaching school-based agriculture out of state	
Teaching another subject	
Agribusiness/Industry/Agency	
Extension/Non-formal agricultural education	
Production agriculture/Farming	
Graduate school	
Military	
Other employment	
Unemployed and/or Undecided	
Unknown	
Total	

Q5 If "Other employment" was selected in the preceding question, please elaborate in the space below. Also address any other items needing clarification.

_____
_____
_____

Q6 Please report the **gender** of 2019-2020 program completers.
Note: The total must equal the number of licensed, program completers previously reported.

Female	
Male	
Non Binary *(any gender identity that does not fit into the gender binary of male and female)*	
Total	

Q7 The following question requests information about the **licensure and/or degrees** received by program completers.

The total of the three fields must equal ${Q3/ChoiceTextEntryValue}.
Female: ${Q6/ChoiceNumericEntryValue/1}
Male: ${Q6/ChoiceNumericEntryValue/2}
Non Binary: ${Q6/ChoiceNumericEntryValue/3}

Q8 Indicate the licensure/degree of 2019-2020 **FEMALE** program completers.

Licensure only, non-degree/no degree awarded	
Undergraduate/Baccalaureate	
Post-baccalaureate (5th year program, no additional degree)	
Graduate	
Total	

Q9 Indicate the licensure/degree of 2019-2020 **MALE** program completers.

Licensure only, non-degree/no degree awarded	
Undergraduate/Baccalaureate	
Post-baccalaureate (5th year program, no additional degree)	
Graduate	
Total	

Q10 Indicate the licensure/degree of 2019-2020 **NON BINARY** program completers.

Licensure only, non-degree/no degree awarded	
Undergraduate/Baccalaureate	
Post-baccalaureate (5th year program, no additional degree)	
Graduate	
Total	

Q11 In the following question, please report the race of program completers in 2019-2020.

The total of the three fields must equal ${Q3/ChoiceTextEntryValue}.
Female: ${Q6/ChoiceNumericEntryValue/1}
Male: ${Q6/ChoiceNumericEntryValue/2}
Non Binary: ${Q6/ChoiceNumericEntryValue/3}

Q12 Indicate the **race** of 2019-2020 **FEMALE** program completers.

African American/Black, Non-Hispanic	
American Indian/Alaska Native	
Asian	
Bi-racial/Multi-racial	
Hispanic/Latino	
Native Hawaiian/Other Pacific Islander	
White, Non-Hispanic	
Other	
Unknown	
Total	

Q13 Indicate the **race** of 2019-2020 **MALE** program completers.

African American/Black, Non-Hispanic	
American Indian/Alaska Native	
Asian	
Bi-racial/Multi-racial	
Hispanic/Latino	
Native Hawaiian/Other Pacific Islander	
White, Non-Hispanic	
Other	
Unknown	
Total	

Q30 Typically, when does your institution conduct **student teaching internships**? Please check all that apply.

- ☐ Summer quarter
- ☐ Fall quarter
- ☐ Winter quarter
- ☐ Spring quarter

Q31 How **long (in weeks)** are your students' teaching internships (student teaching experience)?

_____

Q32 What unique circumstances, challenges, or considerations (if any) should be shared regarding your institution's efforts to prepare school-based Agricultural Education teachers?

_____
_____

Q33 Section 4: Logistical Information

Q34 What **advice, suggestions, tips, or thoughts** would you like to share with National Supply and Demand research team so that we may better help you, your institution, and/or the Ag Ed profession?

_____
_____

Q35
List the names and contact information for **each institution with whom your institution has an articulation agreement** with for Ag Ed teacher certification.

_____
_____

Q36
In effort to improve the accuracy of data collected, **is there anywhere else we should look for information about the supply and demand of school-based agriculture teachers in your state**?

_____
_____

Q37 When **2020-2021 annual supply data** is collected one year from now, who will you be the appropriate contact?

Name _____
Title _____
Email _____

Q38 Respectfully submitted by:

Name _____
Title _____
Institution _____
State _____
Email _____
Phone _____

Q21 To better understand our profession's instructional capacity to prepare school-based agricultural education teachers, please provide the full-time employment equivalent (FTE) dedicated to agricultural teacher education. For example: If two Associate Professors each have a 75% teaching, 20% research, and 5% service appointment, one would indicate 1.5 combined FTE, specific to instructional capacity, in teacher education in the Associate Professor category.

Full Professor (tenure-track)	
Associate Professor (tenure-track)	
Assistant Professor (tenure-track)	
Clinical Faculty/Professor of Practice (non tenure-track)	
Instructor/lecturer	
Graduate teaching assistant in agricultural education teacher preparation	
Other	

Q22 In which college are agricultural education faculty appointments located?

- ☐ College of Agriculture, or similar name
- ☐ College of Education, or similar name
- ☐ College of Science, or similar name
- ☐ Other _____

Q23 Which college grants undergraduate degrees in Agricultural Education?

College of Agriculture, or similar name

- ☐ College of Education, or similar name
- ☐ College of Science, or similar name
- ☐ Other _____

Q24 Which college grants graduate degrees in Agricultural Education?

- ☐ College of Agriculture, or similar name
- ☐ College of Education, or similar name
- ☐ College of Science, or similar name
- ☐ Other _____
- ☐ Not offered

Q25 Please identify the degrees offered by your institution in Agricultural Education. *Select all that apply.*

- ☐ Bachelor of Science (BS)
- ☐ Bachelor of Arts (BA)
- ☐ Master of Science (MS)
- ☐ Master of Arts (MA)
- ☐ Master of Agriculture (MAg)
- ☐ Master of Education (MEd)
- ☐ Other Masters _____
- ☐ Educational Specialist (EdS)
- ☐ Doctor of Education (EdD)
- ☐ Doctor of Philosophy (PhD)

Q26 If a student majors in Agricultural Education at your institution, must they fulfill all requirements for teacher licensure? Remember, a department or program may offer multiple majors.

- ☐ Yes, all program completers with an Agricultural Education major fulfill requirements for teacher licensure.
- ☐ No, non-teaching options are available.

Q27 In addition to teacher licensure, please list degree **options**, **or specializations**, offered within your agricultural education program (ex. Communication, Extension, Leadership & Training, Community-Based Agricultural Education, etc.).

_____

_____

Q28 Does your institution operate using **quarters** or **semesters**?

- ☐ Quarters
- ☐ Semesters

Q29 Typically, when does your institution conduct **student teaching internships**? Please check all that apply.

- ☐ Fall semester
- ☐ Spring semester

Q14 Indicate the **race** of 2019-2020 **NON BINARY** program completers.

African American/Black, Non-Hispanic	
American Indian/Alaska Native	
Asian	
Bi-racial/Multi-racial	
Hispanic/Latino	
Native Hawaiian/Other Pacific Islander	
White, Non-Hispanic	
Other	
Unknown	
Total	

Q15 Looking to the future, how many license-eligible, program completers in Agricultural Education do you anticipate will be produced by your institution in…

- 2020-2021 _____
- 2021-2022 _____
- 2022-2023 _____

Q16 Section 2: COVID-Related Information

Q17 How would you describe your Ag Ed students' level of preparation for virtual or hybrid learning at the start of the Covid-19 pandemic?

_____

Q18 To your knowledge, did the Covid-19 pandemic impacted the career choice of 2020 program completers? If so, how?

_____

Q19 Describe any specific changes your Ag Ed program made (or plans to make) as a result of the Covid-19 pandemic.

_____

Q20 Section 3: Teacher Preparation Program Capacity

The following section of this instrument is designed to gather data regarding the nature of the agricultural education instruction *(program, department, school)* at your respective institution. **Please note this is only collected every three years. The last time this information was requested was 2017.**

2020 National Demand Instrument

2020 NSD Demand Survey

Q1 Thank you for agreeing to participate in the National Ag Ed Supply and Demand Project. Your responses are very important to us. The information you provide will be helpful in assessing, and addressing, the current shortage of agriculture teachers we face across the nation. Information will be shared among agricultural education family organizations, including AAAE, NAAE, NASAE, and the National FFA Organization. National Teach Ag Campaign staff will collaborate with our team in producing and disseminating national, regional, and state profiles based upon the data gathered.

This instrument is designed to collect information regarding changes within your state's agricultural education profession since the last academic year. Please consider only CURRENT circumstances in your state. Use September 15, 2020 as the baseline date for responses.

Your participation in this research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Should you choose to withdraw, you may email the research team at nsd@aaaeonline.org.

Research records will be kept confidential, consistent with federal and state regulations. The Institutional Review Board for the protection of human participants at Pennsylvania State University has approved this research study, IRB#45604. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at 814-865-1775 or email tkahler@psu.edu to obtain information or to offer input.

Q2 Section 1: Program & Position Attrition

Q3 Between the 2019-2020 and 2020-2021 academic years, were any school-based agricultural education positions lost and/or programs closed in your state?

- ○ No
- ○ Yes

Q4 Please report the total **number of programs closed** in your state between the 2019-2020 and 2020-2021 academic years.

_____

Q5 Please report the **number of positions lost** in your state between the 2019-2020 and 2020-2021 academic years.

_____

Q6 For each of the _____ **positions lost**, please indicate the reason, if known.
Note: Total must match the number reported previously.

Licensed teacher not available	
Lack of enrollment	
Lack of funding	
Other (please explain)	
Unknown	
Total	

Q7 Between the 2019-2020 and 2020-2021 school years, how many agricultural education teachers **left school-based Agricultural Education** and will not be returning to teach agriculture in your state this year?

_____

Q8 For **each of the _____ teachers who left SBAE**, please indicate the reason, if known.
Note: Total must match the number reported previously.

Employment in agribusiness/industry/agency	
Employment in production agriculture/farming	
Employment in another educational content area (outside of Ag Ed)	
Employment as school administrator (Principal, Superintendent, CTE Director, etc.)	
Employment in extension/non-formal agricultural education	
Employment in adult education/Farm Business Management	
Employment as Ag Ed leader (District, State supervisor, FFA staff, etc.)	
Employment in postsecondary education	
Continuing education/graduate school	
Moved out of state (will continue teaching Ag Ed)	
Personal reasons - Health	
Personal reasons - Stay at home parent/caregiver	
Personal reasons - Retirement	
Personal reasons - Death	
Not offered a contract/terminated	
Unknown	
Other (please explain)	
Total	

Q9 Section 2: Current Status of Programs & Teachers

Q10 For the next items, please consider only **CURRENT circumstances** in your state. Use September 15, 2020 as the baseline for responses.

Q11 Please indicate the number of active **PROGRAMS** and **TEACHERS** in your state for the 2020-2021 academic year.
_____ School-based Agricultural Education PROGRAMS
_____ School-based Agricultural Education TEACHERS

Q12 Please indicate the number of **FULL TIME** and **PART TIME TEACHERS** in your state for the 2020-2021 academic year.
Note: Total number combined should equal the number of teachers reported in the preceding question. ***You indicated _____ teachers (full and part time combined).***
FULL TIME school-based Agricultural Education teachers employed : _____
PART TIME school-based Agricultural Education teachers employed : _____
Total : _____

Q13 Please indicate the number of teachers in your state by **GENDER**.

Note: Total number combined should equal the number of teachers reported in the preceding questions. ***You indicated _____ teachers (full and part time combined).***

Female	
Male	
Non Binary	
Unknown	
Other	
Total	

Q14 Please indicate the number of teachers in your state by **RACE**.

Note: Total number combined should equal the number of teachers reported in the preceding questions. ***You indicated _____ teachers (full and part time combined).***

African American/Black, Non-Hispanic	
American Indian/Alaska Native	
Asian	
Bi-racial/Multi-racial	
Hispanic/Latino	
Native Hawaiian/Other Pacific Islander	
White, Non-Hispanic	
Other	
Unknown	
Total	

Q15 We would like to know the sources of **new hires** within school-based Ag Ed in your state. Identify the most recent **professional background or preparation** of all new hires. *Note: A "program completer" is a candidate who has fulfilled program area teacher licensure requirements. This may be considered a program graduate in some cases. An "alternative licensure/route completer" has met all licensure requirements to teach SBAE, but did not complete a agricultural education teacher education program. A "non-licensed individual" is someone who has not completed all requirements for teacher licensure. This may include individuals who are pursuing an alternative route to licensure, were hired as a community expert, etc.*

Previously licensed Ag Ed teacher; moved to a different school-based Ag Ed program	
Newly licensed Ag Ed undergraduate program completer (prepared in-state)	
Newly licensed Ag Ed undergraduate program completer (prepared out-of-state)	
Newly licensed Ag Ed graduate program completer (prepared in-state)	
Newly licensed Ag Ed graduate program completer (prepared out-of-state)	
Alternative licensure/route completer	
Non-licensed individual	
Other	
Unknown	
Total	

Q16 For the ____ **non-licensed individuals** reported as new hires, please indicate **prior educational/employment experience**.

New agriculture graduates (not an Ag Ed graduate program completer)	
New education graduates (not an Ag Ed graduate program completer)	
Other new graduates (not agriculture or education)	
Agribusiness, farming, or industry professional	
Education professional (other content area, etc)	
Retired educator	
Other	
Unknown	
Total	

Q17 As of September 15, 2020, how many positions (if any) remain **unfilled** in your state?
VACANT **FULL TIME** positions in school-based Agricultural Education : _____
VACANT **PART TIME** positions in school-based Agricultural Education : _____
Total : _____

Q18 How many positions and programs were **NEW** for the 2020-2021 academic year?
_____ **New/additional positions** created in school-based Agricultural Education programs (eg. teacher hired at a new program, or program expansion from 1 teacher to 2 teachers, etc.)
_____ New **programs** created in school-based Agricultural Education (eg. newly established or re-established school-based Ag Ed program)

Q19 To identify potential program growth and expansion in your state, indicate **how many schools or school districts** have expressed interest in offering school-based agricultural education, but have not yet moved forward?

_____

Q20 Section 3: Additional Items
If the following information is available for your state, please provide.

Q21 Were school-based agriculture teachers in your state were prepared for the shift to virtual learning in Spring 2020?

_____

Q22 What specific resources and/or professional development were provided to school-based agriculture teachers in your state to help them navigate Covid-related teaching challenges?

_____

Q23 Average contract length for school-based Agricultural Education teachers in your state:
Note: Please include text clarification (Ex. 20 days extended contract OR 12 month contract)

_____

Q24 Percentage of school-based Agricultural Education teachers who receive a stipend for FFA advisement (beyond extended contract):

_____

Q25 Average base starting salary for beginning teachers in school-based Agricultural Education (excluding FFA stipend and/or extended contract):

_____

Q26 Section 4: Logistical Information

Q27 Each year, annual supply data is collected from **teacher educators representing each institution that prepares agricultural educators**. To verify information, please identify all institutions in your state that should be included. Also, please indicate the key faculty contact at each.

Ex. University of ABC, John Doe, jdoe@abc.edu

_____

_____

Q28 When **2020-2021 annual demand data** is collected one year from now, who will be the appropriate contact for your state? Please include NAME, TITLE and EMAIL.

Q29 Who is the **best point of contact for individuals seeking teacher certification/licensure** in your state? Please include NAME, TITLE and EMAIL.

Q30 In effort to improve the accuracy of data collected, **is there anywhere else we should look for information about the supply and demand of school-based agriculture teachers in your state**?

_____

Q31 Respectfully submitted by:

- State _____
- Name _____
- Title _____
- Email _____
- Phone _____

2021 National Supply Instrument

Supply & Demand of Secondary Agricultural Education Teachers in the United States

SUPPLY: FALL 2021

Supply Survey - Block 1

Thank you for agreeing to participate in the National Ag Ed Supply and Demand Project. Your responses are very important to us. The information you provide will be helpful in assessing, and addressing, the current shortage of agriculture teachers we face across the nation. Information will be shared among agricultural education family organizations, including AAAE, NAAE, NASAE, and the National FFA Organization. National Teach Ag Campaign staff will collaborate with our team in producing and disseminating national, regional, and state profiles based upon the data gathered.

Your participation in this research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Should you choose to withdraw, you may email the research team at nsd@aaaeonline.org.

Research records will be kept confidential, consistent with federal and state regulations. The Institutional Review Board for the protection of human participants at Pennsylvania State University has approved this research study, IRB#45604. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at 814-865-1775 or email tkahler@psu.edu to obtain information or to offer input.

Section 1: Annual Supply Data

This instrument is designed to collect information regarding students pursuing **teacher licensure** in Agricultural Education at your institution. For the first five items, please consider **only** the 2020-2021 program completers *(those who fulfilled licensure requirements between August 2020 and August 2021)*.

How many total **program completers** (those who have fulfilled licensure requirements) in Agricultural Education were produced by your program in the 2020-2021 academic year?

As of September 15, 2021, please indicate **confirmed and/or intended employment plans** for 2020-2021 program completers.

Note: The total must equal the number of licensed, program completers reported in the preceding question.

Teaching school-based agriculture in this state	0
Teaching school-based agriculture out of state	0
Teaching another subject	0
Agribusiness/Industry/Agency	0
Extension/Non-formal agricultural education	0
Production agriculture/Farming	0
Graduate school	0
Military	0
Other employment	0
Unemployed and/or Undecided	0
Unknown	0
Total	0

If "Other employment" was selected in the preceding question, please elaborate in the space below. Also address any other items needing clarification.

Please report the **gender** of 2020-2021 program completers.

Note: The total must equal the number of licensed, program completers previously reported.

Female	0
Male	0
Non Binary *(any gender identity that does not fit into the gender binary of male and female)*	0
Total	0

The following question requests information about the **licensure and/or degrees** received by program completers.

The total of the three fields must equal ${q://QID3/ChoiceTextEntryValue}.
Female: ${q://QID68/ChoiceNumericEntryValue/1}
Male: ${q://QID68/ChoiceNumericEntryValue/2}
Non Binary: ${q://QID68/ChoiceNumericEntryValue/3}

Indicate the **licensure/degree** of 2020-2021 **FEMALE** program completers.

Licensure only, non-degree/no degree awarded	0
Undergraduate/Baccalaureate	0
Post-baccalaureate (5th year program, no additional degree)	0
Graduate	0
Total	0

Indicate the **licensure/degree** of 2020-2021 **MALE** program completers.

Licensure only, non-degree/no degree awarded	0
Undergraduate/Baccalaureate	0
Post-baccalaureate (5th year program, no additional degree)	0
Graduate	0
Total	0

Indicate the **licensure/degree** of 2020-2021 **NON BINARY** program completers.

Licensure only, non-degree/no degree awarded	0
Undergraduate/Baccalaureate	0
Post-baccalaureate (5th year program, no additional degree)	0
Graduate	0
Total	0

In the following question, please report the **race** of program completers in 2020-2021.

The total of the three fields must equal ${q://QID3/ChoiceTextEntryValue}.
Female: ${q://QID68/ChoiceNumericEntryValue/1}
Male: ${q://QID68/ChoiceNumericEntryValue/2}
Non Binary: ${q://QID68/ChoiceNumericEntryValue/3}

Indicate the **race** of 2020-2021 **FEMALE** program completers.

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

Indicate the **race** of 2020-2021 **MALE** program completers.

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

Indicate the **race** of 2020-2021 **NON BINARY** program completers.

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

Looking to the future, how many **license-eligible, program completers** in Agricultural Education do you anticipate will be produced by your institution in…

2021-2022	
2022-2023	
2023-2024	

Block 3

Section 2: COVID-Related Information

How would you describe your Ag Ed students' level of preparation for virtual or hybrid learning required throughout the Covid-19 pandemic?

To your knowledge, did the Covid-19 pandemic impacted the career choice of 2021 program completers? If so, how?

Describe any specific changes your Ag Ed program made as a result of the Covid-19 pandemic.

Supply Survey - Block 2

Section 3: Logistical Information

What **advice, suggestions, tips, or thoughts** would you like to share with National Supply and Demand research team so that we may better help you, your institution, and/or the Ag Ed profession?

List the names and contact information for **each institution with whom your institution has an articulation agreement** with for Ag Ed teacher certification.

In effort to improve the accuracy of data collected, **is there anywhere else we should look for information about the supply and demand of school-based agriculture teachers in your state?**

When **2021-2022 annual supply data** is collected one year from now, who will be the appropriate contact?

Name

Title

Email

Respectfully submitted by:

Name

Title

Institution

State

Email

Phone

2021 National Demand Instrument

Supply & Demand of Secondary Agricultural Education Teachers in the United States

DEMAND: FALL 2021

Demand Survey - Block 1

Thank you for agreeing to participate in the National Ag Ed Supply and Demand Project. Your responses are very important to us. The information you provide will be helpful in assessing, and addressing, the current shortage of agriculture teachers we face across the nation. Information will be shared among agricultural education family organizations, including AAAE, NAAE, NASAE, and the National FFA Organization. National Teach Ag Campaign staff will collaborate with our team in producing and disseminating national, regional, and state profiles based upon the data gathered.

This instrument is designed to collect information regarding changes within your state's agricultural education profession since the last academic year. Please consider only CURRENT circumstances in your state. Use September 15, 2021 as the baseline date for responses.

Your participation in this research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Should you choose to withdraw, you may email the research team at nsd@aaaeonline.org.

Research records will be kept confidential, consistent with federal and state regulations. The Institutional Review Board for the protection of human participants at Pennsylvania State University has approved this research study, IRB#45604. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at 814-865-1775 or email tkahler@psu.edu to obtain information or to offer input.

Section 1: Program & Position Attrition

Between the 2020-2021 and 2021-2022 academic years, were any school-based agricultural education positions lost and/or programs closed in your state?

- ○ No
- ○ Yes

Please report the total **number of programs closed** in your state between the 2020-2021 and 2021-2022 academic years.

[ ]

Please report the **number of positions lost** in your state between the 2020-2021 and 2021-2022 academic years.

[ ]

For each of the **${q://QID57/ChoiceTextEntryValue} positions lost**, please indicate the reason, if known.

Note: Total must match the number reported previously.

Licensed teacher not available	0
Lack of enrollment	0
Lack of funding	0
Other (please explain)	0
Unknown	0
Total	0

Between the 2020-2021 and 2021-2022 school years, how many agricultural education teachers **left school-based Agricultural Education** and will not be returning to teach agriculture in your state this year?

For **each of the ${q://QID36/ChoiceTextEntryValue} teachers who left SBAE**, please indicate the reason, if known.

Note: Total must match the number reported previously.

Employment in agribusiness/industry/agency	0
Employment in production agriculture/farming	0
Employment in another educational content area (outside of Ag Ed)	0
Employment as school administrator (Principal, Superintendent, CTE Director, etc.)	0
Employment in extension/non-formal agricultural education	0
Employment in adult education/Farm Business Management	0
Employment as Ag Ed leader (District, State supervisor, FFA staff, etc.)	0
Employment in postsecondary education	0
Continuing education/graduate school	0
Moved out of state (will continue teaching Ag Ed)	0
Personal reasons: Health	0
Personal reasons: Stay at home parent/caregiver	0
Personal reasons: Retirement	0
Personal reasons: Death	0

Not offered a contract/terminated	0
Unknown	0
Other (please explain)	0
Total	0

Section 2: Current Status of Programs & Teachers

For the next items, please consider only **CURRENT circumstances** in your state. Use September 15, 2021 as the baseline for responses.

Please indicate the number of active **PROGRAMS** and **TEACHERS** in your state for the 2021-2022 academic year.

0 School-based Agricultural Education PROGRAMS

0 School-based Agricultural Education TEACHERS

Please indicate the number of **FULL TIME** and **PART TIME TEACHERS** in your state for the 2021-2022 academic year.

Note: Total number combined should equal the number of teachers reported in the preceding question. ***You indicated ${q://QID40/ChoiceNumericEntryValue/7} teachers (full and part time combined).***

FULL TIME school-based Agricultural Education teachers employed	0
PART TIME school-based Agricultural Education teachers employed	0
Total	0

Please indicate the number of teachers in your state by **GENDER**.

Note: Total number combined should equal the number of teachers reported in the preceding questions. ***You indicated ${q://QID40/ChoiceNumericEntryValue/7} teachers (full and part time combined).***

Female	0
Male	0
Non Binary	0
Unknown	0
Other	0
Total	0

Please indicate the number of teachers in your state by **RACE**.

Note: Total number combined should equal the number of teachers reported in the preceding questions. ***You indicated ${q://QID40/ChoiceNumericEntryValue/7} teachers (full and part time combined).***

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

We would like to know the sources of **new hires** within school-based Ag Ed in your state. Identify the most recent **professional background or preparation** of all new hires.

Note:
A "program completer" is a candidate who has fulfilled program area teacher licensure requirements. This may be considered a program graduate in some cases.

An "alternative licensure/route completer" has met all licensure requirements to teach SBAE, but did not complete a agricultural education teacher education program.

A "non-licensed individual" is someone who has not completed all requirements for teacher licensure. This may include individuals who are pursuing an alternative route to licensure, were hired as a community expert, etc.

Previously licensed Ag Ed teacher; moved to a different school-based Ag Ed program	0
Newly licensed Ag Ed undergraduate program completer (prepared in-state)	0
Newly licensed Ag Ed undergraduate program completer (prepared out-of-state)	0
Newly licensed Ag Ed graduate program completer (prepared in-state)	0
Newly licensed Ag Ed graduate program completer (prepared out-of-state)	0
Alternative licensure/route completer	0
Non-licensed individual	0
Other	0

Unknown	0
Total	0

For the ${q://QID5/ChoiceNumericEntryValue/16} **non-licensed individuals** reported as new hires, please indicate **prior educational/employment experience**.

New agriculture graduates (not an Ag Ed graduate program completer)	0
New education graduates (not an Ag Ed graduate program completer)	0
Other new graduates (not agriculture or education)	0
Agribusiness, farming, or industry professional	0
Education professional (other content area, etc)	0
Retired educator	0
Other	0
Unknown	0
Total	0

As of September 15, 2021, how many positions (if any) remain **unfilled** in your state?

VACANT **FULL TIME** positions in school-based Agricultural Education	0
VACANT **PART TIME** positions in school-based Agricultural Education	0
Total	0

How many positions and programs were **NEW** for the 2021-2022 academic year?

0

New/additional positions created in school-based Agricultural Education programs (eg. teacher hired at a new program, or program expansion from 1 teacher to 2 teachers, etc.)

0

New **programs** created in school-based Agricultural Education (eg. newly established or re-established school-based Ag Ed program)

To identify potential program growth and expansion in your state, indicate **how many schools or school districts** have expressed interest in offering school-based agricultural education, but have not yet moved forward?

Demand Survey - Block 2

Section 3: Additional Items

If the following information is available for your state, please provide.

Describe the status of school-based agriculture and teachers in your state given the continued challenges with Covid?

What specific resources and/or professional development have been/are being provided to school-based agriculture teachers in your state to help them navigate Covid-related teaching challenges?

Average contract length for school-based Agricultural Education teachers in your state:
Note: Please include text clarification (Ex. 20 days extended contract OR 12 month contract)

Percentage of school-based Agricultural Education teachers who receive a stipend for FFA advisement (beyond extended contract):

Average base starting salary for beginning teachers in school-based Agricultural Education (excluding FFA stipend and/or extended contract):

Demand Survey - Block 3

Section 4: Logistical Information

Each year, annual supply data is collected from **teacher educators representing each institution that prepares agricultural educators**. To verify information, please identify all institutions in your state that should be included. Also, please indicate the key faculty contact at each.

Ex. University of ABC, John Doe, jdoe@abc.edu

When **2021-2022 annual demand data** is collected one year from now, who will be the appropriate contact for your state? Please include NAME, TITLE and EMAIL.

Name
Title
Email

Who is the **best point of contact for individuals seeking teacher certification/licensure** in your state? Please include NAME, TITLE and EMAIL.

Name

Title

Email

In effort to improve the accuracy of data collected, **is there anywhere else we should look for information about the supply and demand of school-based agriculture teachers in your state**?

Respectfully submitted by:

State

Name

Title

Email

Phone

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2022 National Supply Instrument

Supply & Demand of Secondary Agricultural Education Teachers in the United States

SUPPLY: FALL 2022

Supply Survey - Block 1

Thank you for agreeing to participate in the National Ag Ed Supply and Demand Project. Your responses are very important to us. The information you provide will be helpful in assessing, and addressing, the current shortage of agriculture teachers we face across the nation. Information will be shared among agricultural education family organizations, including AAAE, NAAE, NASAE, and the National FFA Organization. National Teach Ag Campaign staff will collaborate with our team in producing and disseminating national, regional, and state profiles based upon the data gathered.

Your participation in this research is entirely voluntary. You may refuse to participate or withdraw at any time without consequence. Should you choose to withdraw, you may email the research team at nsd@aaaeonline.org.

Research records will be kept confidential, consistent with federal and state regulations. The Institutional Review Board for the protection of human participants at Pennsylvania State University has approved this research study, IRB#45604. If you have any questions or concerns about your rights or a research-related injury and would like to contact someone other than the research team, you may contact the IRB Administrator at 814-865-1775 or email tkahler@psu.edu to obtain information or to offer input.

Section 1: Annual Supply Data

This instrument is designed to collect information regarding students pursuing **teacher licensure** in Agricultural Education at your institution. For the first five items, please consider **only** the 2021-

If "Other employment" was selected in the preceding question, please elaborate in the space below. Also address any other items needing clarification.

Please report the **gender** of 2021-2022 program completers.

Note: The total must equal the number of licensed, program completers previously reported.

Female	0
Male	0
Non Binary *(any gender identity that does not fit into the gender binary of male and female)*	0
Total	0

The following question requests information about the **licensure and/or degrees** received by program completers.

The total of the three fields must equal ${q://QID3/ChoiceTextEntryValue}.
Female: ${q://QID68/ChoiceNumericEntryValue/1}
Male: ${q://QID68/ChoiceNumericEntryValue/2}
Non Binary: ${q://QID68/ChoiceNumericEntryValue/3}

Indicate the **licensure/degree** of 2021-2022 **FEMALE** program completers.

Licensure only, non-degree/no degree awarded	0

2022 program completers *(those who fulfilled licensure requirements between August 2021 and August 2022)*.

How many total **program completers** (those who have fulfilled licensure requirements) in Agricultural Education were produced by your program in the 2021-2022 academic year?

As of September 15, 2022, please indicate **confirmed and/or intended employment plans** for 2021-2022 program completers.

Note: The total must equal the number of licensed, program completers reported in the preceding question.

Teaching school-based agriculture in this state	0
Teaching school-based agriculture out of state	0
Teaching another subject	0
Agribusiness/Industry/Agency	0
Extension/Non-formal agricultural education	0
Production agriculture/Farming	0
Graduate school	0
Military	0
Other employment	0
Unemployed and/or Undecided	0
Unknown	0
Total	0

Undergraduate/Baccalaureate	0
Post-baccalaureate (5th year program, no additional degree)	0
Graduate	0
Total	0

Indicate the **licensure/degree** of 2021-2022 **MALE** program completers.

Licensure only, non-degree/no degree awarded	0
Undergraduate/Baccalaureate	0
Post-baccalaureate (5th year program, no additional degree)	0
Graduate	0
Total	0

Indicate the **licensure/degree** of 2021-2022 **NON BINARY** program completers.

Licensure only, non-degree/no degree awarded	0
Undergraduate/Baccalaureate	0
Post-baccalaureate (5th year program, no additional degree)	0
Graduate	0
Total	0

In the following question, please report the **race** of program completers in 2021-2022.

The total of the three fields must equal ${q://QID3/ChoiceTextEntryValue}.
Female: ${q://QID68/ChoiceNumericEntryValue/1}

Other	0
Unknown	0
Total	0

Indicate the **race** of 2021-2022 **NON BINARY** program completers.

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

Looking to the future, how many **license-eligible, program completers** in Agricultural Education do you anticipate will be produced by your institution in...

2022-2023	
2023-2024	
2024-2025	

Male: ${q://QID68/ChoiceNumericEntryValue/2}
Non Binary: ${q://QID68/ChoiceNumericEntryValue/3}

Indicate the **race** of 2021-2022 **FEMALE** program completers.

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

Indicate the **race** of 2021-2022 **MALE** program completers.

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0

Supply Survey - Block 2

Section 2: Logistical Information

What **advice, suggestions, tips, or thoughts** would you share with NSD research team so that we may better help you, your institution, and/or the Ag Ed profession?

List the names and contact information for **each institution with whom your institution has an articulation agreement** with for Ag Ed teacher certification.

Is there anywhere else we should look for information about the supply and demand of school-based agriculture teachers in your state?

When **2022-2023 annual supply data** is collected one year from now, who will be the appropriate contact?

Name

Title

Email

Respectfully submitted by:

Name

Title

Institution

State

Email

Phone

2022 National Demand Instrument

Supply & Demand of Secondary Agricultural Education Teachers in the United States

DEMAND: FALL 2022

Demand Survey - Block 1

Thank you for agreeing to participate in the National Ag Ed Supply and Demand Project. Your responses are very important to us. The information you provide will be helpful in assessing, and addressing, the current shortage of agriculture teachers we face across the nation. Information will be shared among agricultural education family organizations, including AAAE, NAAE, NASAE, and the National FFA Organization. National Teach Ag Campaign staff will collaborate with our team in producing and disseminating national, regional, and state profiles based upon the data gathered.

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Section 1: Program & Position Attrition

Between the 2021-2022 and 2022-2023 academic years, were any school-based agricultural education positions lost and/or programs closed in your state?

- ○ No
- ○ Yes

Please report the total **number of programs closed** in your state between the 2021-2022 and 2022-2023 academic years.

Please report the **number of positions lost** in your state between the 2021-2022 and 2022-2023 academic years.

For each of the **${q://QID57/ChoiceTextEntryValue} positions lost**, please indicate the reason, if known.

Note: Total must match the number reported previously.

Licensed teacher not available	0
Lack of enrollment	0
Lack of funding	0
Other (please explain)	0
Unknown	0
Total	0

Between the 2021-2022 and 2022-2023 school years, how many agricultural education teachers **left school-based Agricultural Education** and will not be returning to teach agriculture in your state this year?

For **each of the ${q://QID36/ChoiceTextEntryValue} teachers who left SBAE**, please indicate the reason, if known.

Note: Total must match the number reported previously.

Employment in agribusiness/industry/agency	0
Employment in production agriculture/farming	0
Employment in another educational content area (outside of Ag Ed)	0
Employment as school administrator (Principal, Superintendent, CTE Director, etc.)	0
Employment in extension/non-formal agricultural education	0
Employment in adult education/Farm Business Management	0
Employment as Ag Ed leader (District, State supervisor, FFA staff, etc.)	0
Employment in postsecondary education	0
Continuing education/graduate school	0
Moved out of state (will continue teaching Ag Ed)	0
Personal reasons: Health	0
Personal reasons: Stay at home parent/caregiver	0
Personal reasons: Retirement	0
Personal reasons: Death	0
Not offered a contract/terminated	0
Unknown	0
Other (please explain)	0
Total	0

Section 2: Current Status of Programs & Teachers

For the next items, please consider only **CURRENT circumstances** in your state. Use September 15, 2022 as the baseline for responses.

Please indicate the number of active **PROGRAMS** and **TEACHERS** in your state for the 2022-2023 academic year.

0	School-based Agricultural Education PROGRAMS
0	School-based Agricultural Education TEACHERS

Please indicate the number of **FULL TIME** and **PART TIME TEACHERS** in your state for the 2022-2023 academic year.

Note: Total number combined should equal the number of teachers reported in the preceding question. ***You indicated ${q://QID40/ChoiceNumericEntryValue/7} teachers (full and part time combined).***

FULL TIME school-based Agricultural Education teachers employed	0
PART TIME school-based Agricultural Education teachers employed	0
Total	0

Please indicate the number of teachers in your state by **GENDER**.

Note: Total number combined should equal the number of teachers reported in the preceding questions. ***You indicated ${q://QID40/ChoiceNumericEntryValue/7} teachers (full and part time combined).***

Female	0
Male	0
Non Binary	0
Unknown	0
Other	0

Total	0

Please indicate the number of teachers in your state by **RACE**.

Note: Total number combined should equal the number of teachers reported in the preceding questions. ***You indicated ${q://QID40/ChoiceNumericEntryValue/7} teachers (full and part time combined).***

African American/Black, Non-Hispanic	0
American Indian/Alaska Native	0
Asian	0
Bi-racial/Multi-racial	0
Hispanic/Latino	0
Native Hawaiian/Other Pacific Islander	0
White, Non-Hispanic	0
Other	0
Unknown	0
Total	0

We would like to know the sources of **new hires** within school-based Ag Ed in your state. Identify the most recent **professional background or preparation** of all new hires.

Note:
A "program completer" is a candidate who has fulfilled program area teacher licensure requirements. This may be considered a program graduate in some cases.

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A "non-licensed individual" is someone who has not completed all requirements for teacher licensure. This may include individuals who are pursuing an alternative route to

licensure, were hired as a community expert, etc.

Previously licensed Ag Ed teacher; moved to a different school-based Ag Ed program	0
Newly licensed Ag Ed undergraduate program completer (prepared in-state)	0
Newly licensed Ag Ed undergraduate program completer (prepared out-of-state)	0
Newly licensed Ag Ed graduate program completer (prepared in-state)	0
Newly licensed Ag Ed graduate program completer (prepared out-of-state)	0
Alternative licensure/route completer	0
Non-licensed individual	0
Other	0
Unknown	0
Total	0

For the ${q://QID5/ChoiceNumericEntryValue/16} **non-licensed individuals** reported as new hires, please indicate **prior educational/employment experience**.

New agriculture graduates (not an Ag Ed graduate program completer)	0
New education graduates (not an Ag Ed graduate program completer)	0
Other new graduates (not agriculture or education)	0
Agribusiness, farming, or industry professional	0
Education professional (other content area, etc)	0
Retired educator	0
Other	0
Unknown	0
Total	0

As of September 15, 2022, how many positions (if any) remain **unfilled** in your state?

VACANT **FULL TIME** positions in school-based Agricultural Education	0
VACANT **PART TIME** positions in school-based Agricultural Education	0
Total	0

How many positions and programs were **NEW** for the 2022-2023 academic year?

0

New/additional positions created in school-based Agricultural Education programs (eg. teacher hired at a new program, or program expansion from 1 teacher to 2 teachers, etc.)

0

New **programs** created in school-based Agricultural Education (eg. newly established or re-established school-based Ag Ed program)

To identify potential program growth and expansion in your state, indicate **how many schools or school districts** have expressed interest in offering school-based agricultural education, but have not yet moved forward?

Demand Survey - Block 2

Section 3: Additional Items

If the following information is available for your state, please provide.

Average contract length for school-based Agricultural Education teachers in your state. Note: Please include text clarification (Ex. 20 days extended contract OR 12 month contract)

Percentage of school-based Agricultural Education teachers who receive a stipend for FFA advisement (beyond extended contract).

Average base starting salary for beginning teachers in school-based Agricultural Education (excluding FFA stipend and/or extended contract).

Demand Survey - Block 3

Section 4: Logistical Information

Each year, annual supply data is collected from **teacher educators representing each institution that prepares agricultural educators**. To verify information, please identify all institutions in your state that should be included. Also, please indicate the key faculty contact at each.

Ex. University of ABC, John Doe, jdoe@abc.edu

When **2022-2023 annual demand data** is collected one year from now, who will be the appropriate contact for your state? Please include NAME, TITLE and EMAIL.

Name

Title

Email

Who is the **best point of contact for individuals seeking teacher certification/licensure** in your state? Please include NAME, TITLE and EMAIL.

Name

Title

Email

In effort to improve the accuracy of data collected, is **there anywhere else we should look for information about the supply and demand of school-based agriculture teachers in your state?**

Respectfully submitted by:

State	
Name	
Title	
Email	
Phone