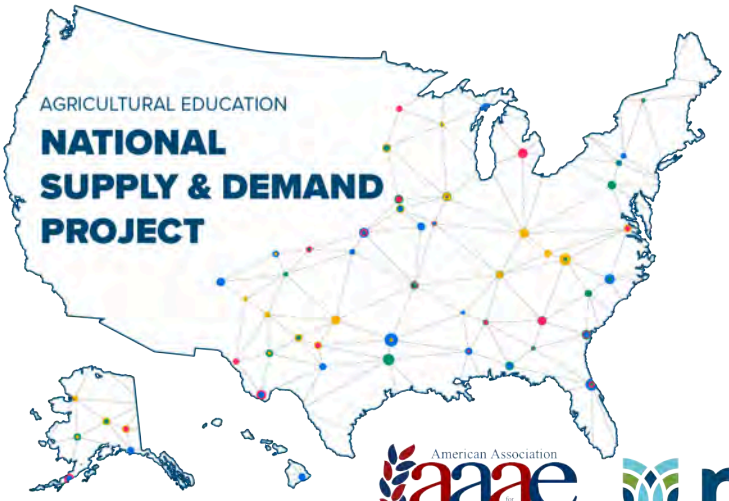
STATUS OF THE U. S. SUPPLY AND DEMAND FOR SCHOOL-BASED AGRICULTURAL EDUCATION TEACHERS 2017-2019



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Status of the U. S. Supply and Demand for School-Based Agricultural Education Teachers 2017-2019

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Researcher Contextual Statement

Since 2014, the present research team has approached the Supply and Demand Study as a multi-institutional, collaborative project; this has provided for the collection of accurate, annual supply-and-demand data relevant to school-based agricultural education. From 2014-2020, Drs. Foster, Lawver, and Smith leveraged diverse expertise, provided necessary resources, and offered long- term commitment to this project. In 2020, the team responded to an RFP for continuation of the project; their selection resulted in an extension through 2026. Seeking to expand access and timeliness of data dissemination for the good of the profession, Dr. Mike Spiess joined the project 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 program. Her research focus includes the professional development of agricultural educators in secondary, post-secondary and non-formal education, specifically, needs assessment, recruitment and retention, agriculture safety, and effective teaching. 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.

Amy Smith is an Associate Professor and Program Leader for Agricultural Education at the University of Minnesota - Twin Cities. Amy teaches a variety of undergraduate and graduate courses, and conducts research centered on teacher recruitment and retention in school-based 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. He currently chairs the AAAE Audit and Finance committee.

The research team offers a great deal of energy and commitment to this study. Individually, each brings a history of active involvement in the profession and a variety of national agricultural education initiatives. Such involvement is the foundation for a strong professional network within the agricultural education family. The institutional locations of faculty team members allowed for greater networking and collaboration with state and national agricultural education leaders. Specifically, the faculty team represented three NAAE regions (PSU: Region 6; UM: Region 3; U.S.U & CSU: Chico: Region 1), two AAAE Regions (North-Central and Western), and three FFA Regions (Pennsylvania: Region VI; Minnesota: Region III; and Utah & California: Region I).

Known Limitations

The project research team would like to explicitly state known limitations of this ambitious, multi-data source project. Data summarized and reported should only be taken at face value, as reported by state and institutional partners through annual data collection efforts. Each state and academic institution has disparate and unique data collection structures and processes; as such, several attempts were made to obtain data. Some state and institutional data is unaccounted for, and some data indicated in the conceptual framework (i.e., educational policy, state and federal funding, etc) are beyond the capacity of this project. The research team invites colleagues to reach out and share sources of similar data collected at scopes smaller than the national level. The primary purpose of this specific supply and demand effort is to provide a general view of the national landscape surrounding the issue of preparing highly qualified educators for school-based agricultural education.

Readers should be cautious when comparing numbers between years as each year has a different number of reporting states and institutions. When reasonable, the number of states or institutions are reported for comparison purposes.

Introduction

The "Supply and Demand Study" has been an ongoing project of the American Association for Agricultural Education in partnership with school-based agricultural education stakeholder groups that has been conducted since 1965. Beginning in 2015, the National Teach Ag Campaign established a formal partnership with AAAE to complete this project.

The teacher shortage in the United States is an increasingly recognized but poorly understood crisis (Garcia & Weiss, 2019a) that includes a myriad of factors from recruitment to retention. The current national estimates of the teacher shortage likely understate the magnitude of the problem, including teacher qualifications, unequal distribution of highly credentialed teachers across high- and low-poverty schools, and is more severe than previously identified (Garcia & Weiss, 2019a). Further, schools are experiencing difficulties filling teacher vacancies and are, in some cases, leaving vacancies open despite actively trying to hire qualified teachers to fill them (Garcia & Weiss, 2019b). In addition to low teacher pay (Garcia & Weiss, 2019c) teacher working environments and school climate (Garcia & Weiss, 2019c) play a significant role in the struggle for teachers to remain in the profession.

These same challenges continue to impact the agricultural education profession. A study conducted by the U.S. Department of Education from 1990-2018, reports 21 states with a high need for school-based agricultural education teachers beginning in 1997 (Cross, 2017). Over those years, more than one-half of those states had experienced multiple years of agriculture teacher shortages (Cross, 2017). Determining who is teaching school-based agricultural education and whether there is an appropriate supply to meet demand is important to teacher educators, students, parents, policy makers and other stakeholders in agricultural education (Lawver, et al., 2018). Further, the National FFA Organization (2017) echoed this sentiment as the shortage of qualified teachers is the greatest challenge facing School-based Agricultural Education.

Since 1965, the national study of supply and demand for teachers of agriculture has been supported and facilitated by the American Association for Agricultural Education (AAAE). Coupled with over a century of research focused on these efforts (Bricker, 1914; Camp, 2000; Camp et al., 2002; Kantrovich, 2010; Swanson, 1942; True, 1929), the project team continues to provide programmatic data for stakeholders in agricultural education to systematically address the supply and demand of school-based agricultural education teachers. If progress was made as a result of these actions, future supply and demand studies could tell that story (Eck & Edwards, 2019).

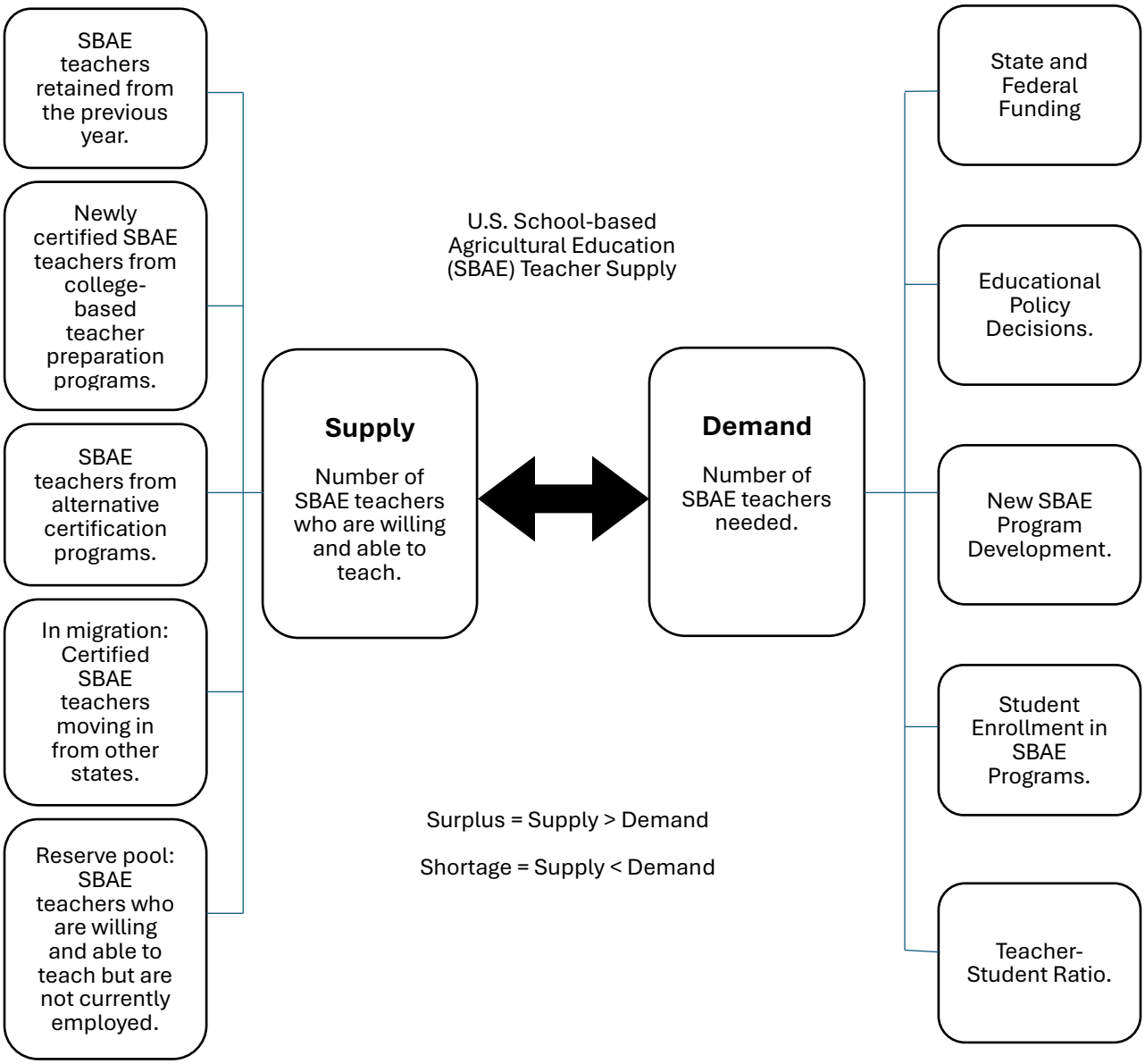
By describing the status of supply and demand within school-based agricultural education, the conversation around interventions and policy can be nuanced. While there have been five main strategies advocated to help fill teacher vacancies including strengthening teacher preparation, improving hiring practices, increasing compensation, providing support for new teachers, and improving working conditions (Podolsky, et al., 2016), it is the responsibility of the leaders of the agricultural education profession (with help from vested partners and stakeholders of school-based agricultural education) to identify contextually relevant and appropriate applications of strategies.

Conceptual Framework

The model shown in figure 1 as adapted from Lindsay et al. (2009) serves as a guide for the data collection in this study. However, data is not collected on all aspects of the model as the study collects data only from the state agricultural education staff and university teacher preparation programs. 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 50 years. Project coordinators worked to strengthen and streamline data collection methods 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. Data collected from the Supply survey included: university teacher education program data, number of licensure program completers, and employment plans of program completers. The number of institutions offering agriculture teacher preparation varies from year to year as new programs are added or defunct programs are closed.

Supply frame. An accurate and up-to-date frame of institutions was scrutinized annually prior to data collection. 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. To assist in

trustworthiness of data collection, on an annual basis, an informational email was sent with a state snapshot of the previous year's data and an indication of who would be contacted in the upcoming year.

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. Data collected from the Demand survey included: existing programs, potential for new programs, number of teachers, types of programs, anticipated retirements, and other demand issues.

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 Local Program Success Specialists reviewed the frame for accuracy on an annual basis and assisted with identifying and making necessary changes. During data collection, the final question on the instrument asked respondents to provide the best contact for their state for the following year, if known. To assist in trustworthiness of data collection, on an annual basis, an informational email was sent with a state snapshot of the previous year's data and an indication of who would be contacted in the upcoming year.

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 Data Collection

Preliminary data for both supply and demand were collected using an online Qualtrics survey. The data collection 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 were treated confidentially. From 2017 – 2019, both supply and demand surveys were distributed in the Fall, consistent with data collection procedures established in 2015. To capture additional institutional data (e.g. faculty appointments, degrees granted, structure of student internships), supplemental questions are asked on the supply survey every three years; for this report, the supplemental questions were asked in 2017.

Data Quality Control

To ensure the best quality of data the 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. If discrepancies could not be resolved the missing or inaccurate data was marked as invalid. Consequently, certain segments of the study had reduced sample size, which is reported when applicable. When reviewing historical reports Kantrovich, (2010) observed that missing data would often be supplemented with prior data, he stated, “In the past data from previous Supply and Demand studies would be used to replace missing data (Kantrovich 2010).” This report includes only the data that was provided, which has led to some discrepancies due to non-responses.

Handling of Potential Survey Error

There are four generally accepted sources of survey error: sampling error, measurement error, coverage error, and nonresponse error (Dillman et al., 2014). The following methods were utilized by the project team to minimize and control potential sources of error. As a census of respondents was desired, the possibility of sampling error was not applicable to this study. Measurement error was mitigated using a panel of experts to review and evaluate validity of the study. This included a review for face, content, and construct validity. The panel of experts included teacher educators, National FFA LPS Specialists, and the NAAE Teach Ag coordinator. Like sampling error, a census approach controlled for coverage error. In addition, the project team utilized trusted source approaches to ensure no stone was left unturned. Recognizing that 7 states and 17 institutions failed to respond to Kantrovich (2010), additional efforts were planned to reduce, or eliminate, non-response. Institutions who failed to respond were contacted via telephone. Due to familiarity with the population as well as the manageable frame size, the project team was aggressive in reaching out via multiple communication modes to obtain representative data. Table 1 reports nonrespondents to the supply of school-based agricultural education teachers; Table 2 reports the nonrespondents for demand of school-based agricultural education teachers. Response rates are reported in appendix J.

Table 1.

Supply of School-based Agricultural Education Teachers Nonrespondents

2017 Nonrespondents	2018 Nonrespondents	2019 Nonrespondents
California State Polytechnic University, Pomona	California State Polytechnic University, Pomona	Ferrum College
Cornell University	Ferrum College	Fort Valley State University
Delaware State University	Fitchburg State University	Missouri State University
Ferrum College	Fort Hays State University	New Mexico State University
Middle Tennessee State University	Ithaca College	Oklahoma Panhandle State University
North Carolina A&T State University	Rutgers University	Texas A&M University-Commerce
Stephen F. Austin State University	Tennessee State University	University of Arkansas Pine Bluff
Texas State University	Tennessee Tech University	University of Massachusetts
University of Arkansas Pine Bluff	University of Arkansas	University of Wyoming
University of Massachusetts	University of Arkansas Pine Bluff	Upper Iowa University
University of Nevada - Reno	University of Maryland Eastern Shore	Virginia State University
University of Tennessee	University of Massachusetts	West Texas A&M University
West Texas A&M University	University of Tennessee	Western Kentucky University
	University of Wisconsin-Platteville	

Table 2

Demand of School-Based Agricultural Education Teachers Nonrespondents

2017 Nonrespondents	2018 Nonrespondents	2019 Nonrespondents
Hawaii	Vermont	Georgia
Massachusetts		Rhode Island
Puerto Rico		Vermont
Vermont		Virgin Islands
Virgin Islands		West Virginia

Data Analysis

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

Study Objectives

Objective One

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

Objective Two

Objective two sought to describe agricultural teacher preparation programs in the United States. Descriptive statistics, which included frequencies and percentages were used to describe agricultural teacher preparation programs including full time equivalent faculty/instructors, college affiliation, etc.

Objective Three

Objective three sought to 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

Sought to describe the scope of school-based agriculture programs in the United States. The scope of school-based agriculture programs was described using descriptive statistics including frequencies and percentages. Further, 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 a Shortfall Score. For this to be calculated, a state had to have both supply and demand numbers reported in a year.

Presentation of the Data

Decisions regarding presentation of data were made with consideration of preserving the integrity for longitudinal analysis and building from previous reports.

Supply and Demand Study Operational Terms and Metrics

The supply and demand instruments collect several variables annually that are used to calculate metrics used in this report. Table 3 provides operational definitions for the study.

Table 3

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 PCs 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 PCs taking jobs in state or out-of-state.

Study Metrics

Utilizing data as defined in Table 3, metrics were developed and calculated by the research project team to assist in the analysis and interpretation of the findings. The study metrics, their definitions, and the formula used for calculations are found in this section.

Figure 2

Study metrics with operational definitions and formula for calculations.

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.
Demand Metric = (Teachers Leaving + New Positions) - Positions Lost	
Net Shortfall	The net shortfall is a metric used to quantify the gap between the demand for teachers and the supply of newly licensed program completers taking jobs in SBAE. This metric helps identify whether there are enough newly trained teachers taking jobs to meet demand. This metric is a replacement for shortfall and considers that not all program completers actually take jobs teaching SBAE. Essentially adjusting for the "yield." A positive number indicates that the demand is higher than the supply of newly certified teachers. Note that the shortfall compares demand to production of traditionally prepared teachers. Many positions are filled by teachers qualifying by other paths.
Net Shortfall Score = Demand Metric - Program Completers taking jobs in SBAE	
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	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**
Shortfall	The shortfall is a metric used to quantify the gap between the demand for teachers and the supply of newly licensed program completers. This metric is an indicator of the ability of teacher preparation programs to meet the demand. A positive number indicates that the demand is higher than the supply. **Shortfall Score = Demand Metric - Program Completers**
Yield	Yield is the ratio of program completers to those who take teaching SBAE jobs in that year. This data is reported by individual institutions and has been used in all supply and demand reports since 1965. **Yield = PCs taking jobs teaching SBAE / Program Completers**
Program Completer Ratio	The ratio is an indicator of the number of new teachers prepared by traditional teacher preparation programs. This metric is useful in understanding the role traditional programs have in supplying teachers. **Program Completer Ratio = Program Completer new hires / Total new hires**

Findings

Objective One

Objective one sought to describe the historical trends of agricultural education in the United States. The importance of having well-prepared teachers and the role of teacher training in the success of school-based agricultural education is evidenced by the provisions of the Smith-Hughes Vocational Education Act of 1917. This significant piece of legislation impacting agricultural education mandated that states appropriate funding to support teacher training to secure other benefits of the act (Swanson, 1942). Evidence of agricultural teacher education programs exists starting as early as 1907 (Bailey, 1908) with reports noting the number of newly qualified candidates existing as of 1920 (Federal Board for Vocational Education, 1921; Jarvis, 1921).

Table 4 shows reporting institutions from 1907 to 2019. These numbers are extracted from historical reports (Jarvis, 1921; Swanson, 1942; etc.), past supply studies (Camp, 1998; Camp, 2000; Camp, 1998, Camp et al., 2002; Kantrovich, 2007; Kantrovich, 2010) and the data collected from 2014- 2019.

Table 4

Historical Perspective of Reported U.S. Agriculture Teacher Preparation Programs

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

Beginning in 1965, AAAE regularly reported on the supply and demand of SBAE teachers. Eck and Edwards (2019) reported that thirty-one reports were completed between 1965

to 2010. It should be noted that Kantrovich (2010) reported the 2006-2009 study as the 36th report. Of those thirty-one reports, there is some variability in the reporting period with some annual reports and some three-year reports. The current project (2014-2019) has generated annual executive summaries and two three-year reports. See appendix B.

Full Time Equivalent Faculty

The total full time equivalent faculty (FTEF) dedicated to agriculture teacher preparation includes tenure track faculty (ranked), non-tenure track faculty (clinical/lecturer), graduate teaching assistants, and others (e.g. adjunct, teaching non-benefitted). Overall, the profession continues to experience a decrease in total FTEF dedicated to agricultural teacher preparation (Figure 2). The program completer to faculty ratio was 3.7 in 2014. In 2017, the program completer to faculty ratio rose to 3.8. Given that the number of program completers is increasing (Figure 3), the program completer to faculty ratio will continue to rise even if the faculty FTEF remains constant. To maintain the 2014 ratio in 2017 an additional 46 FTEF would have been needed nationally. When compared to 2014, 64% of states reported a higher PC/FTEF ratio in 2017 (of 44 states that reported in both years).

Figure 3

Full-Time Position Equivalents Dedicated to Agriculture Teacher Preparation

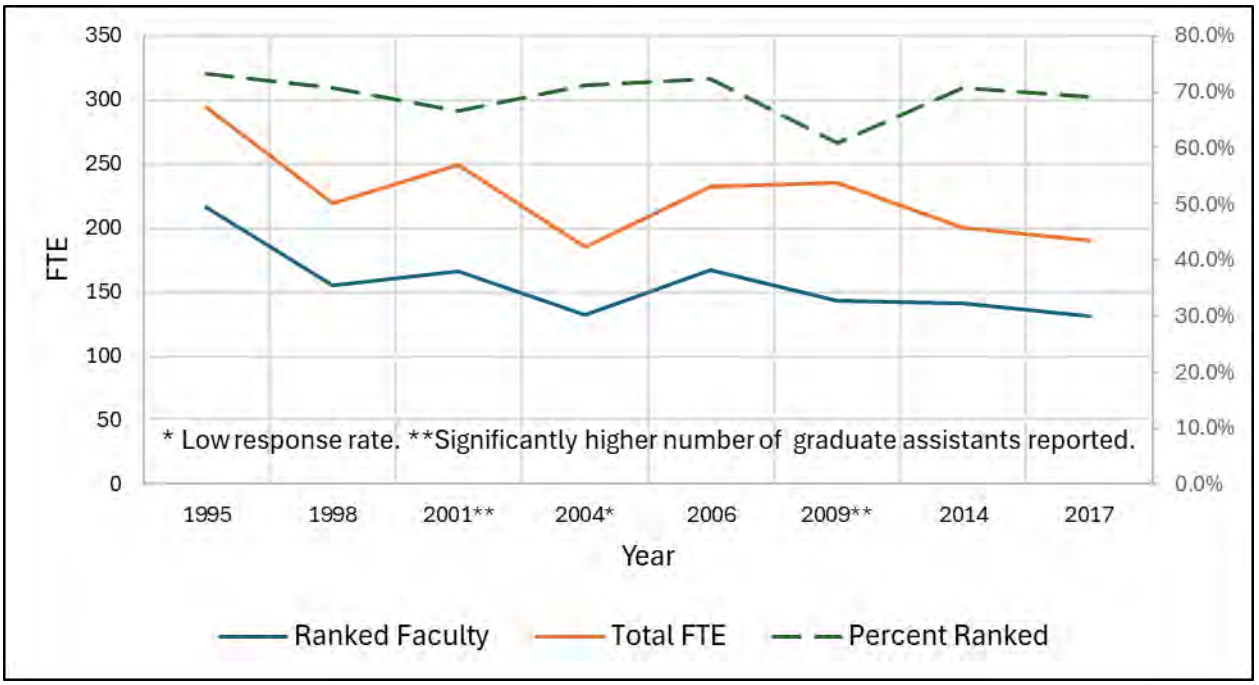
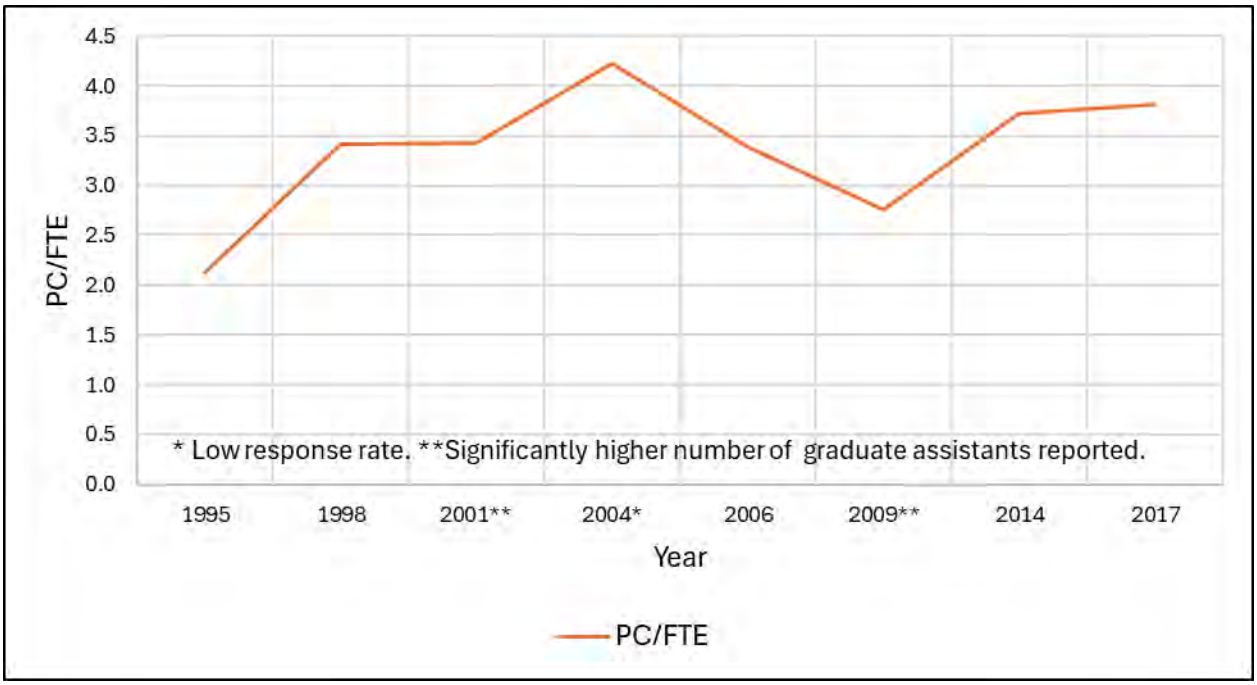


Figure 4

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



School-Based Agricultural Teacher Preparation Program Completers

In 2017, there were 723 agricultural education teacher licensure completers reported by 89 institutions. This was followed by 90 institutions reporting 873 completers in 2018 and 95 institutions reporting 904 completers in 2019. Figures 4 and 5 show the context of license-eligible program completer production with historical views from 1920 and from 2000. A slight upward trend is noticed from 2000 to 2019.

Figure 5

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

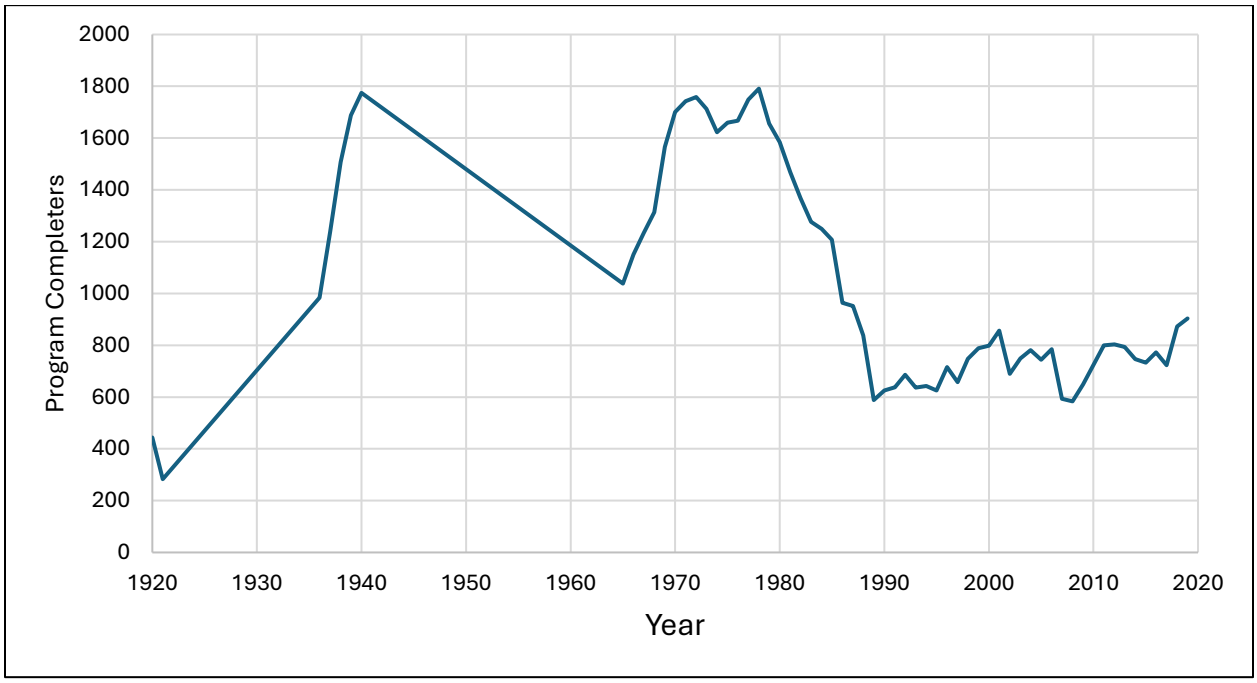
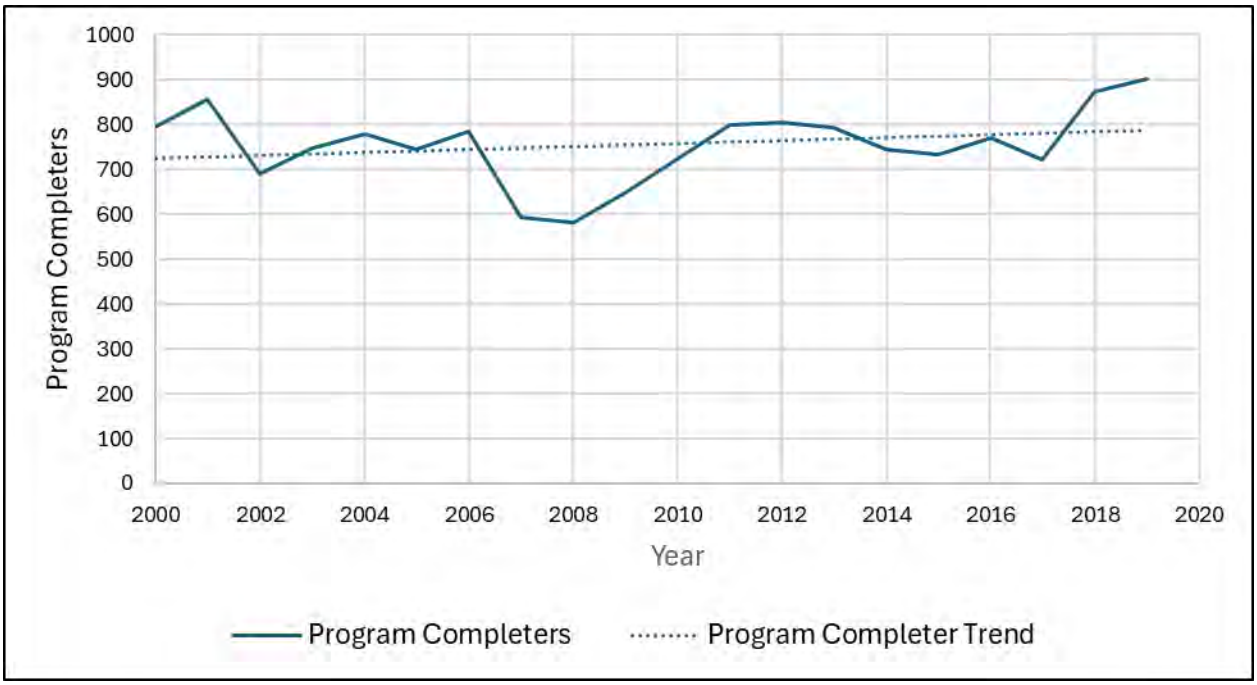


Figure 6

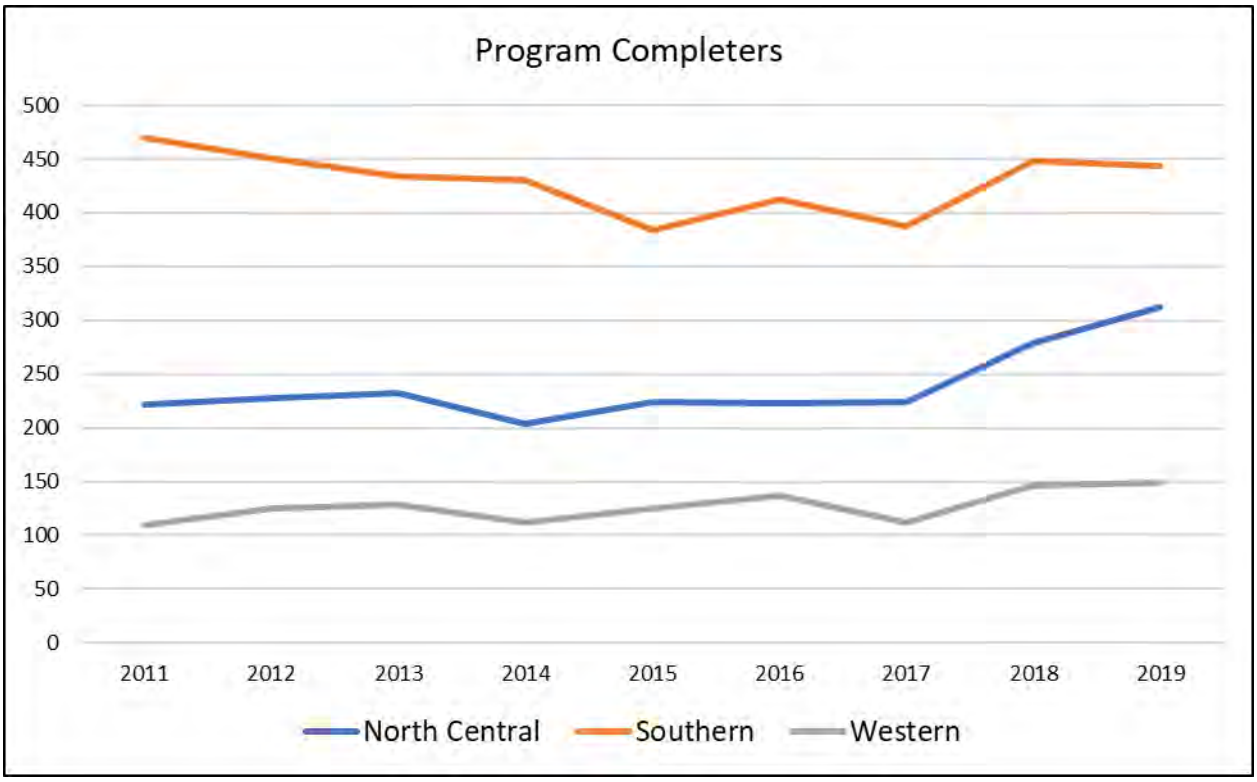
Agricultural Teacher Education Program Completers, 2000-2019



Regional data related to program completers was available from 2011 to present. As indicated in Figure 6, there are regional differences over time. The Southern region produces the most program completers but has a declining trend, while the production of program completers in Western and North Central regions is increasing.

Figure 7

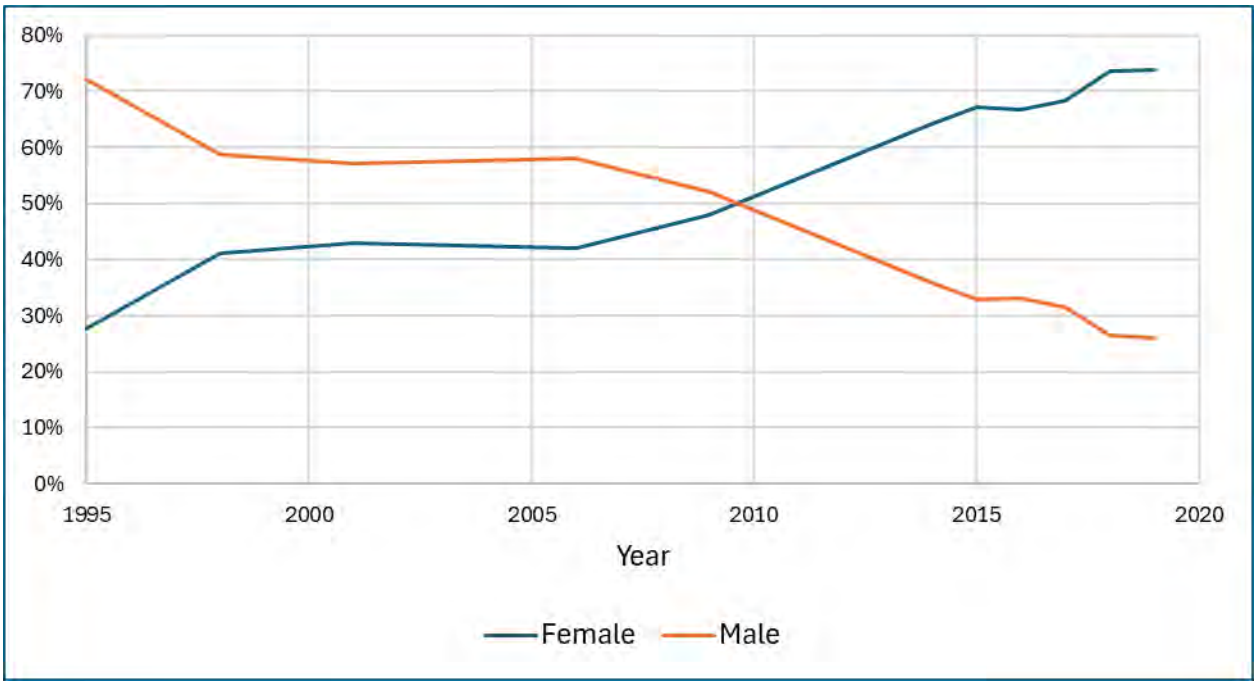
Trends in Program Completers by Region



Over time, there has been a remarkable shift in SBAE teacher gender driven by an even more remarkable shift in program completer gender. Nationally, we see that gender parity of program completers was reached in approximately 2010 (Figure 7). In the past 25 years the male to female ratio has nearly switched. In 2019, 74% of program completers were female.

Figure 8

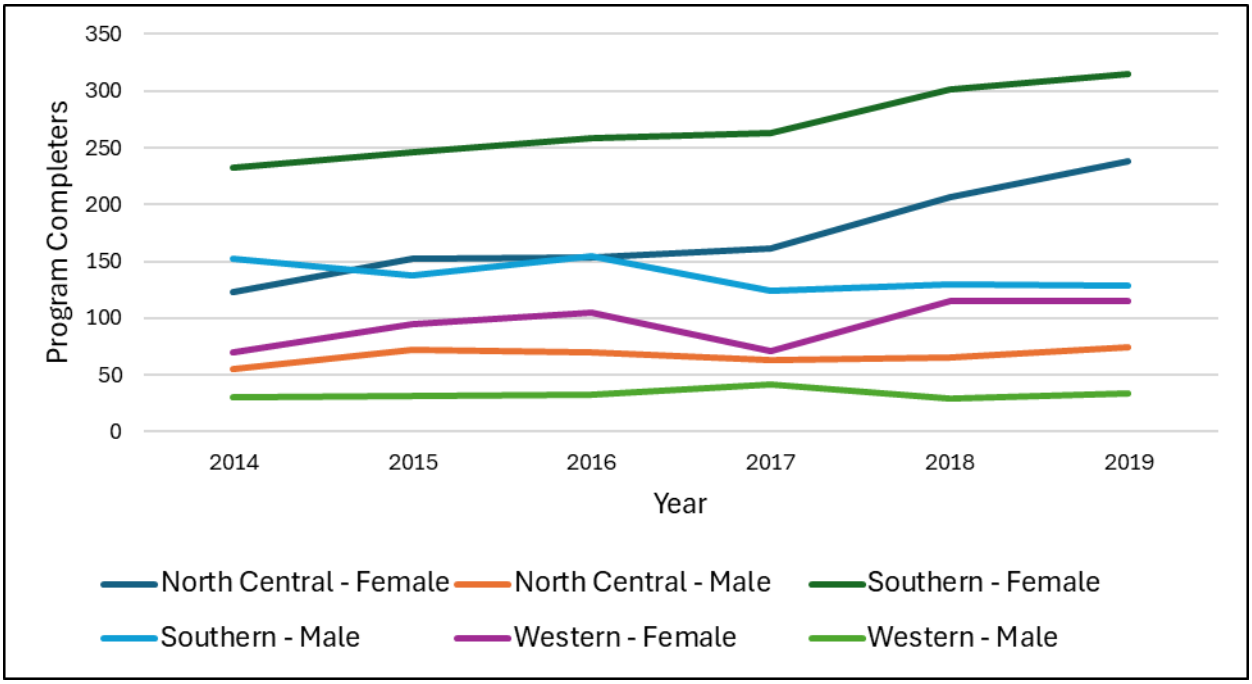
National Trends in Program Completer Gender



There are some regional gender differences to be noted. Female program completers are increasing the most in the North Central region. In the North Central region, growth of female PCs has flattened.

Figure 9

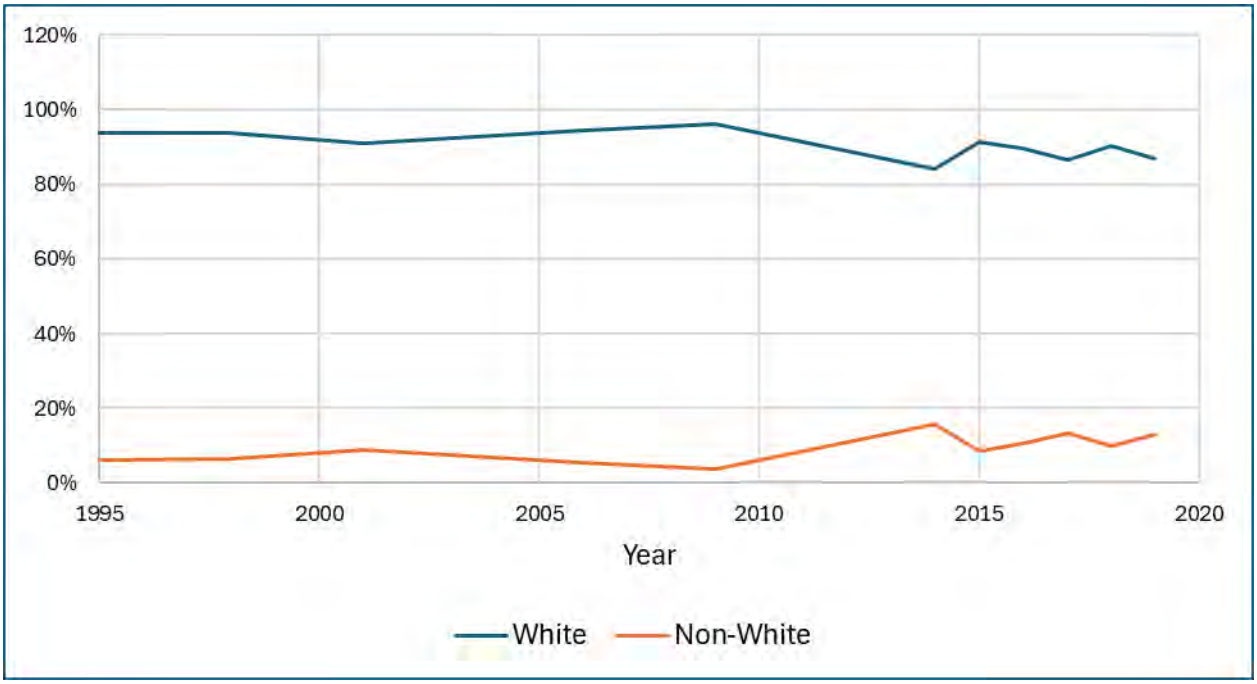
Program Completer Gender by Region



The race of program completers has changed little over the last 24 years. Most recently, we see an increase in non-white program completers largely due to increasing numbers of Hispanic program completers primarily in the west.

Figure 10

Racial Demographics of Program Graduates Over Time



The yield is defined as the ratio of program completers who take jobs in SBAE divided by the total number of program completers. Yield is a metric that has been reported in all AAAE studies. Yield can be influenced by the organization of a program. For example, graduate programs typically have high yields as pre-service students must commit to work past their undergraduate degree. Conversely, graduates of programs that are not as specialized may pursue alternative career pathways as opposed to entering the teaching profession.

Figure 10 presents a historical view of the percentage yield of program completers accepting school-based agricultural education positions. Historically, the average over time is 58.2%. However, the yield has been steadily increasing since a low of 40% in 1985. Table 10 presents the reported number of program completers and the reported number of graduates who accepted positions in school-based agricultural education either in-state or out-of-state as reported by each institution from 2017-2019. In recent years, the yield has been increasing and in 2019 reached over 77%. Combined with the increase in program completers, the actual number of traditionally licensed PCs entering SBAE teaching is increasing. Figure 11 shows this effect.

Figure 11

Percentage of Program Completers Eligible for Licensure Who Secured Teaching Positions in School-Based Agricultural Education

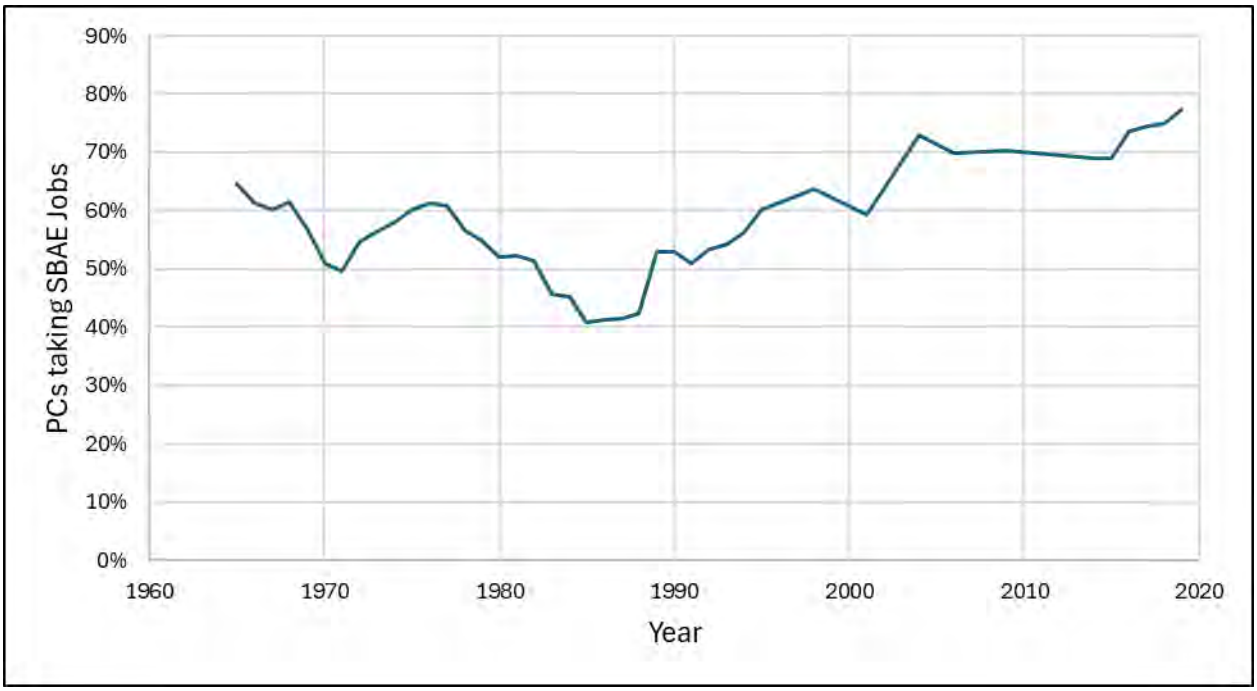
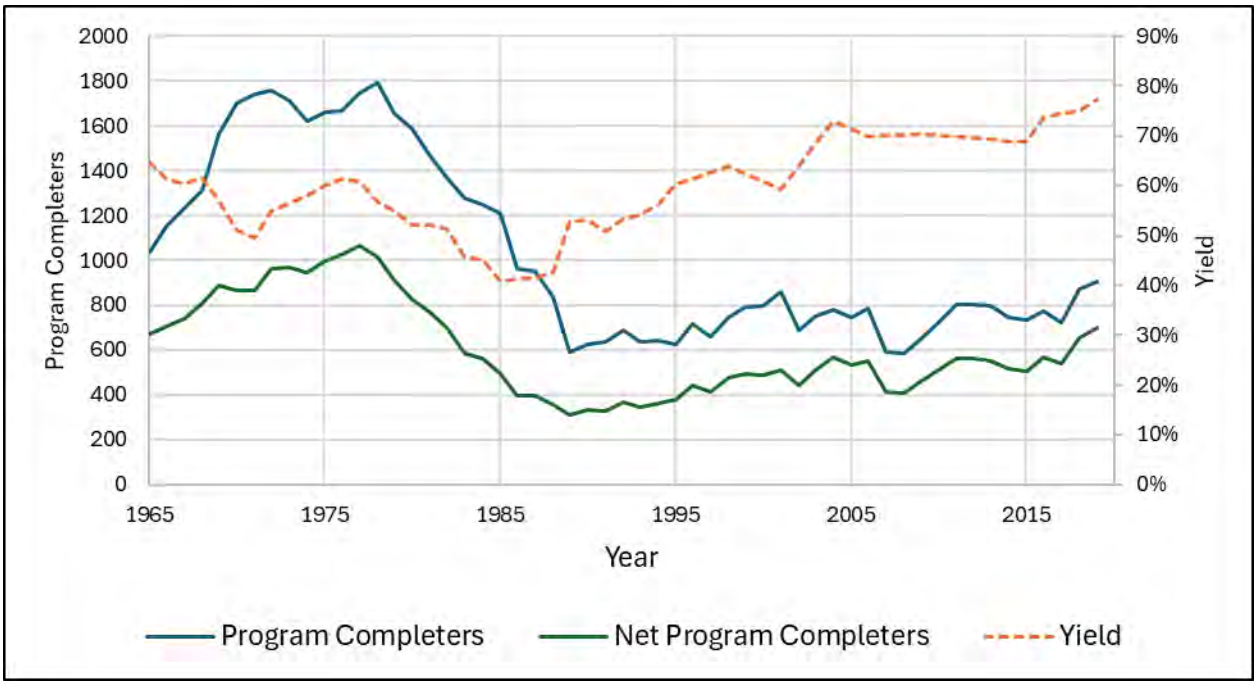


Figure 12

The Effect of Yield on the Supply of Available Teachers



School-Based Agricultural Education Teachers

Since AAAE supply and demand studies began in 1965, the total number of SBAE teachers has been collected. Data from other sources were used prior to 1965. These data are presented in Figure 12. Some variation will occur with response rates. The recent trend (2011-2019) shows a 30% increase in 9 years (Figure 13). Projecting to 2022, we would expect the number of SBAE teachers to exceed 14,000.

Figure 13

Historical Trends in the Number of SBAE Teachers Over Time

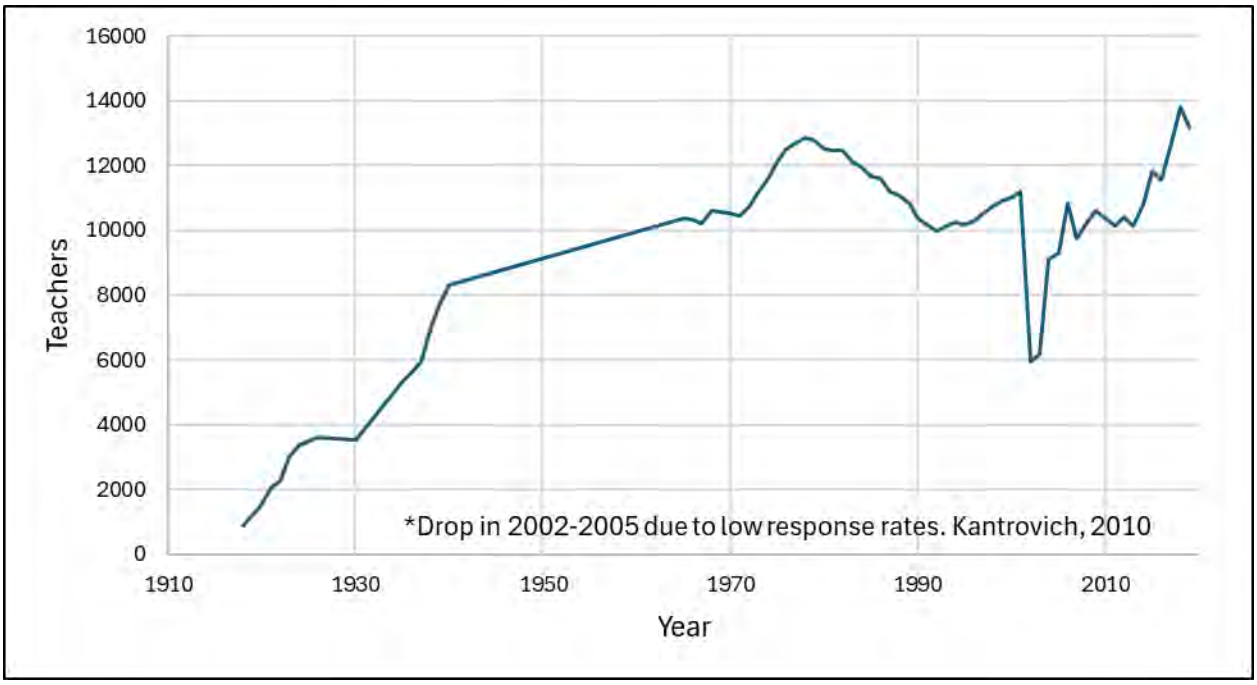


Figure 14

Recent Trends in Number of School-Based Agricultural Education Teachers

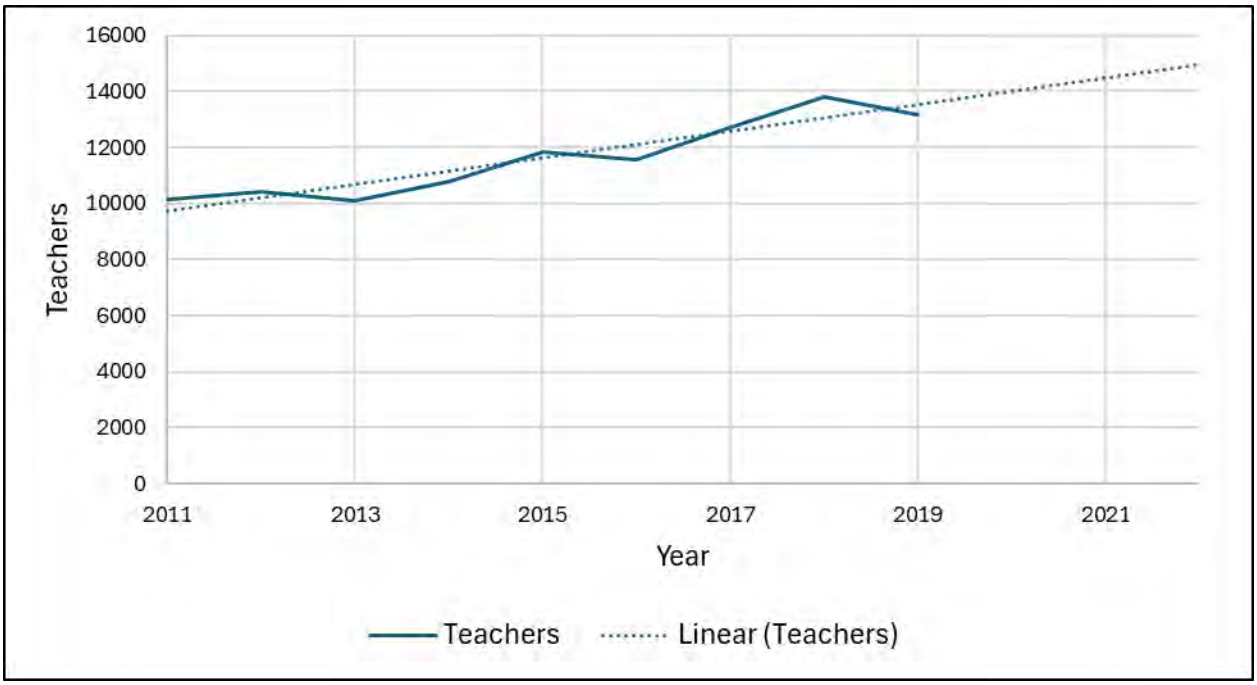


Table 5 below shows demand in the format used in previous studies (Camp and Kantrovich). In their data collection Teachers Leaving included teachers moving from one school to another. The current data collection does not consider moving teachers as part of teachers leaving the profession.

Table 5

Historical Overview of Teaching Positions in Agricultural Education

Year	1985	1990	1998	2001	2006	2009	2014	2015	2016	2017	2018	2019
Total Positions	11687	10356	10706	11189	10846	10600	10802	11834	11557.5	12690	13827	13189.5
Replacements Needed	1043	979	889	1171	1218	870	1219.5	1709.5	1454	1523	1602	1243.8
Moving Between Schools	238	351	314	372	394	203	449	555	539	602	443	400
Net Demand for Replacements Needed	805	628	575	575	824	667	770.5	1154.5	915	921	1159	843.8
Needed but Not Available	8	23	70	67	78	30	96	80	66	76	71	63

Kantrovich (2007) computed a replacement rate which compares Teachers Leaving Positions + New Positions + Vacancies Remaining – Positions Lost – Moving Between Schools to the total number of teachers in the previous year. In studies before 2014, Teachers Leaving included teachers moving. For the current study, we chose to use the number of teachers in the current year as changes in sample size between years could be significant. If a state did not report a component such as positions lost, we assumed it to be zero. We only look at states reporting valid data so the number of teachers may be lower than the total number of teachers reported. If the replacement rate increases and the total number of teachers increases at approximately 2% per year, these two factors indicate that the demand for teachers will increase significantly. The general trend of the replacement rate is decreasing, but it is quite volatile.

Figure 15

Replacement Rate of Teachers

Objective Two

Objective two aimed to describe the SBAE Teacher Preparation Programs in the United States. School-based agricultural education teacher preparation programs in the United States receive regular requests for reports of teacher candidate data, with consistent annual collections as well as more robust collection of programmatic data at the start of each three-year period. Table 6 highlights the number of faculty dedicated to SBAE teacher preparation, showing the percentage of teaching responsibilities**.** This data is divided by region, offering both national total and regional breakdowns for fall 2014 and fall 2017. Additionally, historical trends are presented to provide further context.

Figure 15 highlights the college affiliations of SBAE teacher preparation faculty as reported in 2017. Most faculty members within these programs are based in colleges of agriculture (67 in total), while eight are located in colleges of education, seven in colleges of science and seven in other colleges. For the programs not affiliated with colleges of agriculture or education (ten in total), the following are examples of the departmental or collegiate affiliations reported:

- College of Applied Arts
- College of Applied Science and Technology
- College of Business
- College of Engineering and Applied Sciences
- College of Natural Sciences and Mathematics
- Department of Agriculture

Figure 16 offers insight as to the college granting undergraduate degrees in SBAE teacher preparation in 2017. Most undergraduate students receive their degrees from colleges of agriculture (57 in total), while 15 receive degrees from colleges of education, six from colleges of science, and five institutions that do not offer undergraduate degrees. For those programs not affiliated with colleges of agriculture, education, or science (6 in total), the institutions provided an open response, examples include:

- College of Applied Arts
- College of Applied Sciences and Technology
- College of Business and Technology
- College of Natural Science and Mathematics

Table 6

SBAE Faculty by Region & U.S. Totals

Year	AAAE Region	n	Total FTE	Asst./Assoc./ Full Prof.	Full Prof.	Assoc. Prof.	Asst. Prof.	Clinical	Instructor	Grad TA	Other
2017	North Central	36	45.41	18.05	12.45	14.91	7.55	12.70	2.00	3.85	71.51
2017	Southern	39	62.15	21.55	20.65	19.95	4.00	8.00	12.10	0.00	86.25
2017	Western	14	23.65	7.25	10.05	6.35	2.00	4.25	2.00	0.00	31.90
2017	**Total**	89	131.21	46.85	43.15	41.21	13.55	24.95	16.10	3.85	189.66
2014	North Central	29	48.05	29.85	14.30	7.70	7.85	2.20	10.25	5.50	0.25
2014	Southern	44	105.55	80.80	26.35	22.00	32.45	1.25	11.00	11.50	1.00
2014	Western	17	46.45	30.65	13.40	4.75	12.50	1.00	7.30	7.50	0.00
2014	**Total**	90	200.05	141.30	54.05	34.45	52.80	4.45	28.55	24.50	1.25
2009	**Total**	72	235.70	142.00				NC	29.80	61.50	1.00
2006	**Total**	88	231.90	143.40				NC	21.50	39.00	4.00
2004	**Total**	NA	185.50	167.50				NC	12.50	35.00	6.00
2001	**Total**	NA	249.70	132.00				NC	18.00	60.80	4.50
1998	**Total**	78	155.00	219.00				NC	12.1	41.3	10.75
1995	**Total**	84	215.70	294.30				NC	18.1	43	17.5

Note. NC=Not Collected, NA=Not Available, n=number of institutions reporting

Figure 16

College Affiliation of SBAE Teacher Preparation Faculty in 2017

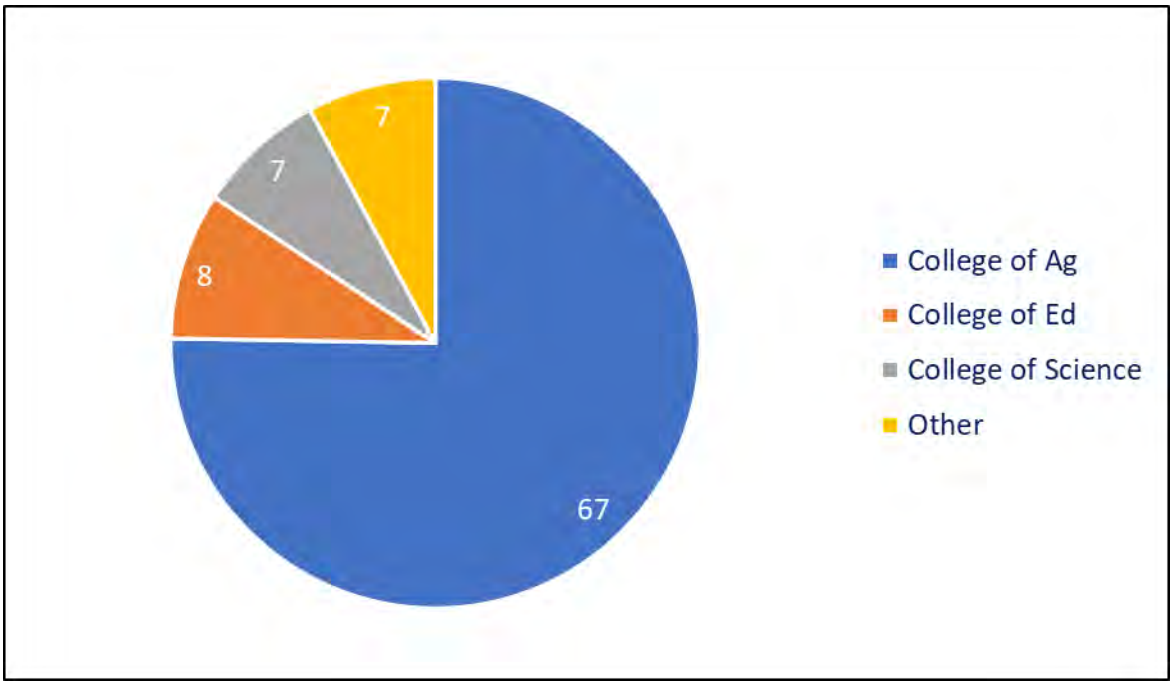


Figure 17

College Affiliation of Undergraduate SBAE Teacher Preparation Programs in 2017

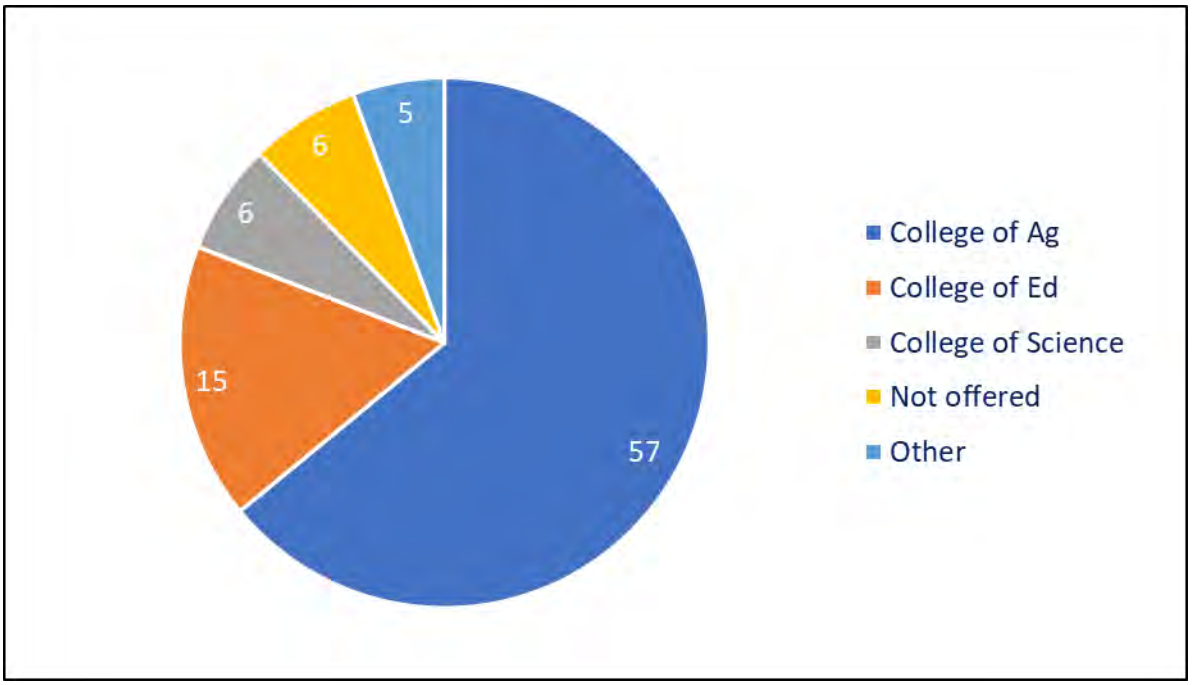
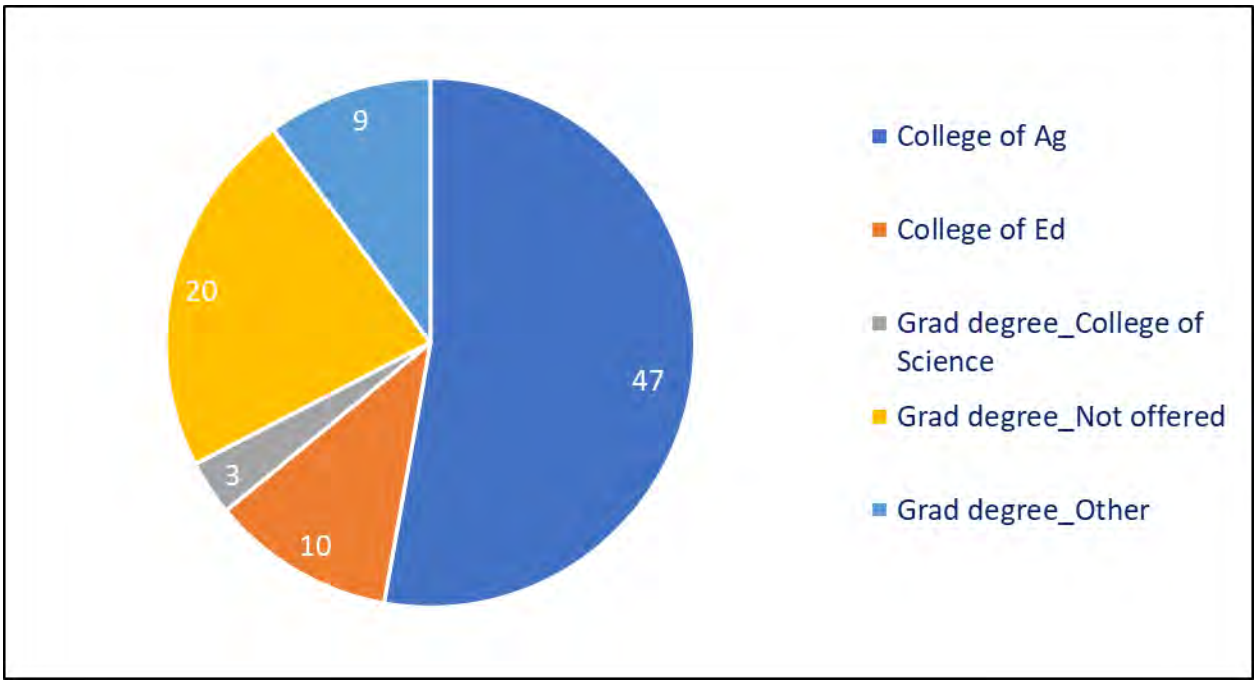


Figure 17 indicates the college affiliations for SBAE teacher preparation graduate degrees. Most graduate programs offered are housed in colleges of agriculture (47 in total), with 10 in the college of education and three in the college of science. Twenty programs do not offer a graduate degree. For graduate programs not affiliated with a college of agriculture or education (9 in total), the respective institutions reported the following college affiliations:

- College of Applied Science and Technology
- College of Business
- College of Education
- Collaborative agreement with local institutions
- Graduate School/College

Figure 18

College Affiliation of Graduate SBAE Teacher Preparation Programs in 2017



In 2019, data obtained from SBAE teacher preparation programs revealed a predominant trend of slight increases in the North Central region of AAAE, amounting to 40.2%, in contrast to figures reported in 2016. Conversely, the Southern region's proportion of such programs increased slightly accounting for 44.9% of the total programs. The North Central region persists with the lowest number of institutions offering teacher preparation programs, accounting for only 15%. Table 7 provides a detailed overview of the total number of SBAE teacher preparation institutions identified for the years 2016 and 2019 across different regions (see Table 7).

Table 7

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

	2016		2019	
AAAE Region	Institutions	% of Total	Institutions	% of Total
North Central	38	37.6%	43	40.2%
Southern	46	45.5%	48	44.9%
Western	17	16.8%	16	15.0%
Total	101	100.0%	107	100.0%

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

Table 8 presents, by region, programmatic opportunities available for individuals interested in becoming licensed SBAE teachers. The majority of responding institutions offer a Bachelor of Science degree with 3.4% offering a Bachelor of Arts (n = 3). Other institutions offer a Master of Science related to agricultural education (45.4%, n = 40), 18.1% offer a Master of Education, and 79.9% offer Master of Agriculture degrees. Sixteen (18.1%) responding institutions offer a Ph.D. in agricultural education, with 5.6% offering Ed.D. and 2.2% offering Ed.S. Graduate degree options also vary across institutions and include:

- Master of Science in Leadership Education
- Masters of Agricultural and Environmental Education
- Post BACC certification only program
- Career and Technical Education in Agriculture
- Master of Agricultural and Extension Education
- Agricultural Extension and Education
- Agricultural Literacy Master of Extension Education
- Continuing Education Master’s Program

Table 8

Post-Secondary Degrees Offered in SBAE Teacher Preparation Programs in 2017

Region	Inst.	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
North Central	36	1	33	3	15	2	10	0	1	0	7
Southern	38	1	39	2	18	5	6	2	4	4	8
Western	14	1	11	2	7	1	0	0	1	0	1
Total	88	3	83	7	40	8	16	2	6	4	16

Undergraduate Programs

In reviewing undergraduate program offerings reported by the 89 SBAE teacher preparation programs in 2017, 67.5% (n = 60) require all agricultural education majors to complete teacher licensure requirements while 32.5% (n = 29) offer a non-teaching option. The project team provided an opportunity for institutions to describe nonteaching/licensure degree options and/or specializations for agricultural education majors. The following list showcases the variety of non-teaching options for undergraduate students. Within teacher preparation programs, a range of minors and specializations were reported. These minors encompass Agricultural Education, Agricultural Communication, Community Development Leadership and Social Change, and Non-Formal and Community Education. Additionally, specializations such as Agricultural Communication & Leadership were noted.

Agricultural Communication
Non-teaching option
Communications and Leadership
Career Technical Educator Preparation
Extension Education
Extension Agri-technology
Non-Formal Education
Communication Industries and Agencies
Agricultural Science and Technology
Agricultural Leadership Extension
Agricultural Education Industry Option
Teaching Advanced Technical Education
Community Development Agriculture, Government and Industry, International
Non-Formal and Community Education
Leadership Skilled and Technical Science Education

Student Internships

A pivotal component of teacher preparation is the culminating student teaching internship. In 2017, data was gathered to determine the timing of these internships. Of the eighty-nine respondents, eighty-five institutions used semester based internships. Three (4%) are fall only, thirty-three (39%) are spring only and forty-nine (58%) are fall and spring. (refer to Tables 9 and 10 for further details).

Table 9

Student Teaching Internships by Semester (n=89)

Region	Fall		Spring		Both	
	f	%	*f*	%	*f*	%
North Central	21	43%	35	43%	20	43%
Southern	23	47%	37	45%	22	48%
Western	5	10%	10	12%	4	9%
Total	49	100%	82	100%	46	100%

Table 10

Student Teaching Internships by Quarter (n=89)

Region	Fall		Winter		Spring		Summer		All	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Southern	0	0%	1	25%	1	33%	0		0	
Western	3	100%	3	75%	2	67%	0		0	
Total	3	100%	4	100%	3	100%	0		0	

Table 11 describes the student teaching internship length, which varies from 10 weeks to 40 weeks, with a mean of 15.9 weeks. This represents a small increase from 15.0 in 2014.

Table 11

Student Teaching Internship Length in Weeks (n=89)

Region	*n*	Mean	Min	Max
North Central	36	15.6	10	32
Southern	39	15.2	12	30
Western	14	18.6	12	40
Total	89	15.9	10	40

Yield of Program Completers

For comparative and historical analysis, Table 12 presents data on the number of license-eligible program completers by region spanning from 2014 to 2019. Additional data reported includes the number of program completers accepting positions in-state and out-of-state, with a percent yield. The percentage yield of program completers refers to the relative proportion of graduates from an agricultural education program who secured teaching positions, regardless of location. Over the span of six years, across all regions, the average percent yield is 73%.

Table 12

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%
2014	Southern	430	270	17	287	67%
2014	Western	112	79	8	87	78%
2015	North Central	224	127	26	153	68%
2015	Southern	384	230	29	259	67%
2015	Western	125	82	11	93	74%
2016	North Central	223	141	30	171	77%
2016	Southern	412	260	20	276	67%
2016	Western	137	107	11	118	86%
2017	North Central	224	141	26	167	75%
2017	Southern	387	247	25	272	70%
2017	Western	112	90	10	100	89%
2018	North Central	279	190	30	220	79%
2018	Southern	448	286	23	309	69%
2018	Western	146	108	17	125	86%
2019	North Central	312	196	38	234	75%
2019	Southern	443	308	28	336	76%
2019	Western	149	122	8	130	87%
	6 Year Total	4751	3104	377	3477	73%

n=89, 90, 95 respectively for 2017, 2018, and 2019.

Production of Program Completers

Table 13 presents a compilation of agriculture teacher preparation institutions that provided data on license-eligible program completers from 2017 to 2019. The project team categorized these institutions into lower producing, middle producing, and upper producing thirds, and arranged them alphabetically within each category. This data aims to offer stakeholders a snapshot of program supply and is not intended as a ranking system.

Table 13

License-Eligible Program Completers Produced Institutional Presented Alphabetically

Lower 33% Institutions (0-7 candidates in 3 years)	Middle 33% Institutions (8-23 candidates in 3 years)	Top 33% Institutions (24-129 candidates in 3 years)
Alcorn State University	Arkansas State University	Abraham Baldwin Agricultural College
Appalachian State University	College of the Ozarks	Angelo State University
Arkansas Tech University; Jonesboro	Delaware Valley University	Arkansas Tech University
Brevard College	Illinois State University	Auburn University
California State Polytechnic University; Pomona	Louisiana State University	California Polytechnic State University; San Luis Obispo
Central State University	Louisiana Tech	California State University; Chico
Concordia University	McNeese State University	California State University; Fresno
Cornell University	Michigan State University	Clemson University
Delaware State University	Middle Tennessee State University	Colorado State University
Dordt University	Mississippi State University	Iowa State University
Eastern Kentucky University	Montana State University	Kansas State University
Eastern New Mexico University	Morehead State University	Missouri State University
Emmanuel University	Murray State University	North Carolina State University
Ferrum College	New Mexico State University	North Dakota State University
Fitchburg State University	North Carolina A&T State University	Northwest Missouri State University
Fort Hays State University	Northwestern Oklahoma State University	Oklahoma State University
Fort Valley State University	Pennsylvania State University	Oregon State University
Huntington University	Southeast Missouri State University	Purdue University
Ithaca College	Southern Arkansas University	Sam Houston State University
Morningside University	Southern Illinois University	South Dakota State University
Oklahoma Panhandle State University	Stephen F_ Austin State University	Tarleton State University
Rutgers University	SUNY Oswego	Texas A&M University
Southern Utah University	Texas A&M University-Kingsville	Texas A&M University-Commerce
Southwest Minnesota State University	Texas State University	Texas Tech University
Sul Ross State University	The University of Tennessee	The Ohio State University
Tennessee State University	University of Arizona	University of Florida
Tennessee Tech University	University of Arkansas	University of Georgia
University of Alaska- Fairbanks	University of California; Davis	University of Illinois at Urbana-Champaign
University of Arkansas Pine Bluff	University of Connecticut	University of Kentucky
University of Central Missouri	University of Idaho	University of Missouri
University of Delaware	University of Minnesota-Twin Cities	University of Mount Olive
University of Maryland	University of Tennessee-Martin	University of Nebraska
University of Maryland Eastern Shore	University of Wisconsin-Platteville	University of PR at Mayaguez
University of Minnesota Crookston	University of Wyoming	University of Wisconsin - River Falls
University of Nevada - Reno	West Texas A&M University	Utah State University
University of New Hampshire	Western Illinois University	Virginia Tech
Upper Iowa University	Wilmington College	Washington State University
Virginia State University		West Virginia University
Western Kentucky University		

Note: Data is for the period 2017-2019

Table 14 displays metrics pertaining to the supply of license-eligible program completers by state. It includes the number of completers reported from 2017 to 2019, the number of reporting institutions in each state, and the full-time equivalent (FTE) faculty dedicated to agriculture teacher preparation. Additionally, Table 14 presents ratios of license-eligible program completers to FTE, completers to current school-based agricultural education teachers, and completers to school-based agricultural education programs in each state.

Table 14

State Production Metrics by Number of Certified Agricultural Education Candidates

	2017		Annual Average 2017-2019					
State	Inst.	Total FTE	PC	Programs	Teachers	PC/FTE	PC/ Program	PC/ Teacher
Alabama	1	7	15	271	304	2.143	0.055	0.049
Alaska				14	15			
Arizona	1	3	5	80	111	1.778	0.067	0.048
Arkansas	4	6.6	25	210	285	3.838	0.121	0.089
California	4	12.75	67	332	934	5.229	0.201	0.071
Colorado	1	1.35	10	120	140	7.654	0.086	0.074
Connecticut	1	0	5	20	117		0.246	0.043
Delaware	1	1	1	37	70	1.333	0.036	0.019
Florida	1	3.2	19	356	453	5.938	0.053	0.042
Georgia	2	3.85	30	338	466	7.792	0.089	0.064
Hawaii				21	22			
Idaho	1	5	6	94	142	1.267	0.067	0.045
Illinois	4	7	27	344	426	3.905	0.080	0.064
Indiana	1	2.5	22	223	292	8.667	0.097	0.074
Iowa	2	3.5	26	241	265	7.429	0.108	0.098
Kansas	2	4.4	20	206	246	4.470	0.095	0.080
Kentucky	5	6	31	157	272	5.167	0.198	0.114
Louisiana	3	5.75	13	200	271	2.319	0.067	0.049
Maine				128	147			
Maryland	2	1	1	55	76	1.000	0.018	0.013
Massachusetts				17	73			
Michigan	1	6	3	119	133	0.444	0.022	0.020
Minnesota	3	3.75	10	197	260	2.667	0.051	0.038
Mississippi	2	3.7	8	121	143	2.072	0.063	0.054
Missouri	5	9.6	37	359	531	3.819	0.102	0.069
Montana	1	1.4	8	95	104	5.476	0.080	0.074
Nebraska	1	2.96	19	189	208	6.532	0.102	0.093
Nevada			1	27	36			
New Hampshire	1	5	0	12	27	0.000	0.000	0.000
New Jersey	1	2	1	47	62	0.250	0.011	0.008
New Mexico	2	2.2	5	83	101	2.424	0.064	0.053
New York	2	4.05	10	203	300	2.387	0.048	0.032
North Carolina	2	7.7	41	375	528	5.281	0.109	0.077
North Dakota	1	0.5	11	86	98	21.333	0.125	0.109
Ohio	2	2.75	18	333	492	6.667	0.055	0.037
Oklahoma	3	6.75	31	362	445	4.543	0.085	0.069
Oregon	1	1.5	9	113	141	5.778	0.076	0.061
Pennsylvania	2	5.75	11	163	240	1.913	0.068	0.046
Puerto Rico	1	4	8	112	138	2.083	0.074	0.061
Rhode Island				5	9			

	2017		Annual Average 2017-2019					
State	Inst.	Total FTE	PC	Programs	Teachers	PC/FTE	PC/ Program	PC/ Teacher
South Carolina	1	4	10	114	144	2.583	0.091	0.072
South Dakota	1	1.5	17	101	104	11.333	0.168	0.163
Tennessee	5	5.5	17	219	357	3.152	0.079	0.049
Texas	7	20	169	1065	2500	8.433	0.158	0.067
Utah	1	1.7	14	89	157	8.039	0.154	0.087
Virginia	2	2.2	9	209	310	3.939	0.041	0.028
Washington	1	2	8	222	334	4.167	0.037	0.025
West Virginia	1	6	11	80	102	1.833	0.138	0.108
Wisconsin	2	2.25	23	253	317	10.222	0.091	0.072
Wyoming	1	1	4	54	58	4.000	0.074	0.069
Total	89	189.66	835	8870	13505	4.403	0.094	0.062

Note: Inst. = Institutions reporting in 2017. FTE=Full Time Equivalent faculty reported for 2017. Averages are the average reported for 2017, 2018, and 2019.

The research team also sought to identify the unique challenges facing agricultural teacher educators in 2017. During this 3-year collection of data, a comprehensive instrument was utilized in 2017 with open-ended responses to allow agricultural teacher educators to report unique challenges their institution is facing and concerns for the profession. Five thematic areas were identified. Table 15 presents each theme, and an example quote which aligns to each.

Table 15

Unique Challenges and Opportunities of Agricultural Teacher Education as Reported in 2017

Identified Theme	**Sample Quote**
State Certification and Licensure Challenge	*Continual changes in state licensure and secondary education requirements.* *Oppressive and complex certification requirements.* *Requirement to pass multiple assessments (TAP Test, AG ED Content Test, edTPA).* *High credit hour requirements for degree and certification.* *Increased teacher certification requirements making it difficult to complete in four years.*

Identified Theme	Sample Quote
Program Structure and Institutional Support	*AgEd teacher preparation is officially listed under the School of Education but requires substantial commitment from the College of Agriculture, Health, and Natural Resources.* *Lack of an undergraduate degree in Agricultural Education; students major in specific fields and minor in Secondary Education.* *Various institutions have moved to offer part-time and online courses to accommodate working students.* *Some programs operate under a Residency program for teacher licensure involving a mix of on-campus and in-field experiences.*
Faculty and Resource Limitations	*Faculty retirements and slow re-hiring processes due to state budget cuts.* *Small institutions with limited faculty struggle to provide necessary coursework.* *Increase in student enrollment creating strain on faculty.* *Need for hiring new tenure-track Agricultural Education faculty members.*
Diverse Student Demographics and Transfer Students	*Diverse population of Ag Education majors, including black, white, and international students.* *High percentage of students transferring from community colleges as juniors.* *Minority students face additional challenges in entering the teaching profession.*

Identified Theme	Sample Quote
Geographical and Practical Challenges	*Urban institutions and small HBCUs have difficulty producing many ag teachers.* *Distance and travel requirements for student teaching supervision.* *State-approved programs struggle with large service areas for student teaching placements.*
Financial Constraints and Economic Factors	*Cost of exams during the preservice teaching program.* *Beginning teacher salaries are not competitive nationally.* *Education scholarships reduce costs for graduate students but do not address undergraduate financial burdens.*
Program Innovations and Adaptations	*Year-round student teaching options and phased teaching experiences.* *Micro-teaching lessons in high schools prior to full student teaching.* *Increased focus on agricultural mechanization in curricula to meet specific skill needs.*

Over the three-year period, the total number of program completers displayed variability, peaking notably in 2018 and 2019. Female program completers consistently surpassed male counterparts throughout all three years, highlighting a prevailing gender disparity within the field. The demographic composition of completers predominantly comprised individuals identified as White, although the proportion of non-White completers exhibited fluctuations over the observed period. Notably, Hispanic and African American completers constituted significant portions of the non-White demographic, underscoring some level of diversity among program completers.

Objective Three

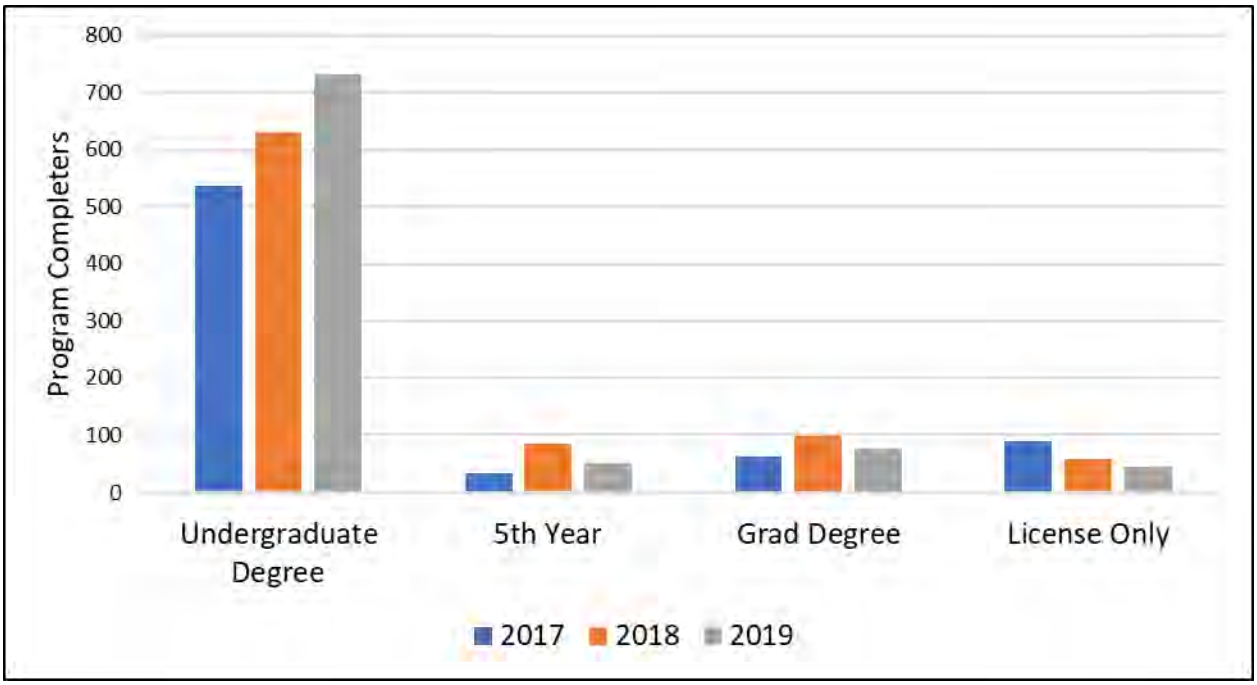
Objective three focused on describing the characteristics of licensed program completers, providing a detailed analysis of the 2,501 individuals who successfully completed the teacher licensure process in agricultural education between 2017 and 2019. The research team defined "program completers" as graduates of agriculture teacher preparation programs who fulfilled all licensure requirements. The data collected for this objective serves as a foundation for longitudinal studies, enabling the assessment of representation and population trends within national school-based agricultural education preparation.

Pathway to degree and/or license

The first step of analysis required a review of the pathway to licensure for program completers' entry into the profession on an annual basis. Continuing a trend from previous reports of the National Supply and Demand Project, the most common pathway of License-Eligible Program Completers is the undergraduate education pathway. Figure 18 shows the breakdown of program completers by year and pathway of undergraduate degree, 5th year program, graduate degree or license only program. Over the 2017-2019 three-year period, the undergraduate degree pathway accounted for 76% of program completers, 5th year program completers accounted for 7%, graduate degree accounted for 10% and license-only program completers accounted for the remaining 8%.

Figure 19

License-Eligible Program Completers by Degree/License Earned



Employment Plans of Program Completers

Table 16 represents the intended employment plans for all license-eligible program completers from the 2017-2019 data collection period. A total of 2,500 students earned a teaching license in agriculture during this time. Most graduates (75.7%; 1,893) sought employment teaching school-based agriculture compared to 24.2% who sought alternate careers.

Table 16

Employment Plans of License-Eligible Program Completers

Year	2017	2018	2019	Total	%
SBAE in State	478	584	626	1688	67.5%
SBAE Out of State	61	70	74	205	8.2%
Teaching Other Subject	23	28	32	83	3.3%
Agribusiness	33	42	56	131	5.2%
Extension	15	15	15	45	1.8%
Prod Ag	5	13	7	25	1.0%
Graduate school	46	81	51	178	7.1%
Other Employment	22	16		38	1.5%
Military	3	0	2	5	0.2%
Unknown	28	17	18	63	2.5%
Unemployed/undecided	9	7	7	23	0.9%
Program Completers	723	873	904	2500	100.0%
Institutions Reporting	82	83	86		

Demographics of Program Completers

The study examined demographics of candidates completing licensure requirements from 2017-2019 (N = 2,500). With regard to gender, most of the licensed-eligible program completers are female (71%; *f* = 1,786) with 29% male (*f* = 714). Gender was reported as unknown or other for 4.8% (*f* = 121) of program completers. As illustrated in Figure 19, most license-eligible program completers from 2017-2019 were White (88%; *f* = 2,198). Of those, 64% (*f* = 1,589) of the licensed-eligible program completers were white female with 24.4% (*f* = 611) white male, and 4.8%. The ethnicity of license-eligible program completers is reported by gender in Table 17. The number of female license-eligible program completers increased by 343 from 2017 to 2019, while the number of male license-eligible program completers decreased by 47. The ethnicity of both females and males remains largely White/non-Hispanic.

Figure 20

Race of Program Completers from 2017 - 2019

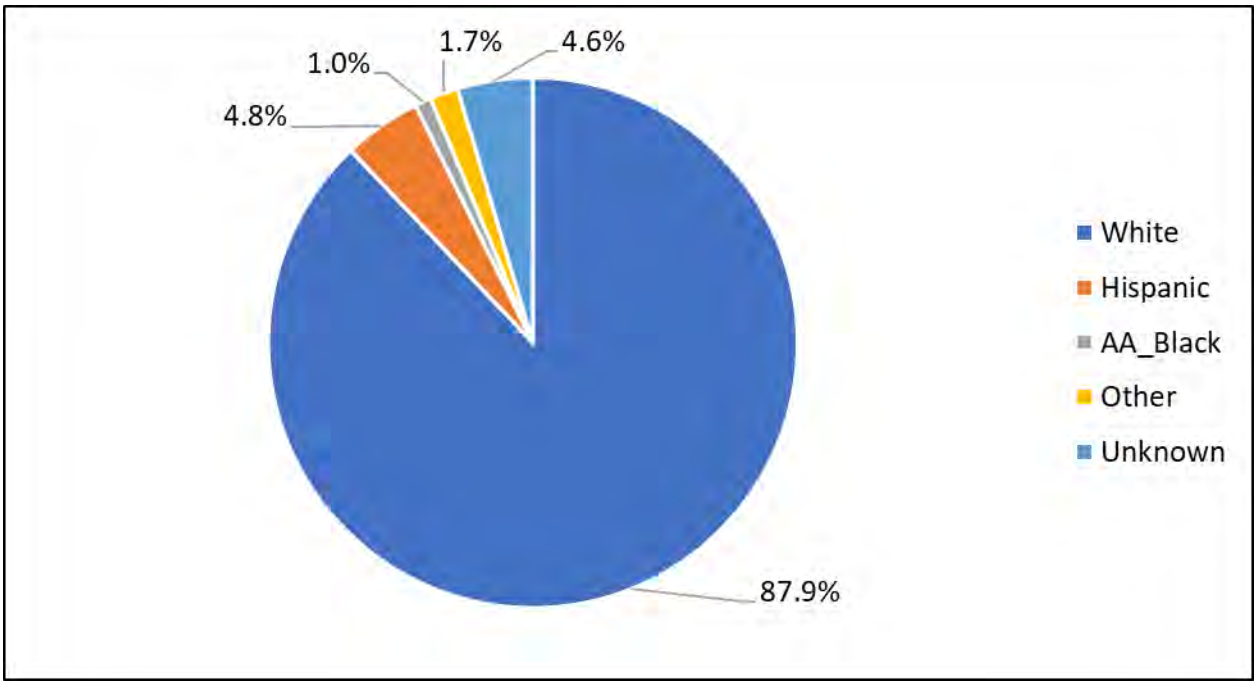


Table 17

Ethnicity of License-Eligible Program Completers, Segmented by Gender

Year	2017	2018	2019	Total	%
Female AA	9	4	5	18	0.70%
Female AI/AN	3	3	4	10	0.40%
Female Asian	1	0	3	4	0.20%
Female Hispanic	19	25	25	69	2.80%
Female Multi	2	6	5	13	0.50%
Female NH/PI	0	2	0	2	0.10%
Female Other	6	0	0	6	0.20%
Female White	432	571	586	1589	63.60%
Female Unknown	23	12	40	75	3.00%
Total Female	495	623	668	1786	71.44%
Male AA	2	2	3	7	0.30%
Male AI/AN	0	0	3	3	0.10%
Male Asian	1	0	1	2	0.10%
Male Hispanic	19	19	12	50	2.00%
Male Multi	0	2	1	3	0.10%
Male NH/PI	0	0	0	0	0.00%
Male Other	0	0	0	0	0.00%
Male White	194	216	199	609	24.40%
Male Unknown	12	11	17	40	1.60%
Total Male	228	250	236	714	28.56%
Total	723	873	904	2500	100%

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

Program Completers by Institution Type

The project team carefully reviewed the data supplied to the National Supply and Demand Project to classify the contributing institutions into three categories: 1862 Land-Grant Institutions, 1890 Land-Grant Institutions, and Non-Land-Grant Institutions (which includes private institutions). An 1862 Land-Grant Institution refers to universities designated by state legislatures or Congress under the Morrill Act of 1862 to focus on agricultural and mechanical research. An 1890 Land-Grant Institution, established under the second Morrill Act in 1890, specifically provided educational opportunities in the agricultural and mechanical fields to African Americans in the segregated South. Table 18 illustrates program completers by each category of institution including gender and ethnicity. During the three-year period from 2017-

2019, land-grant institutions prepared 58% of all program completers. The data indicates that most land-grant program completers were female (59%) and White (61%)

Table 18

Program Completers by Institution Type

Year	2017			2018			2019		
Type	1862	1890	NLG	1862	1890	NLG	1862	1890	NLG
Program Completers	413	9	301	483	12	378	510	12	382
Female	286	4	205	352	9	262	376	10	272
Male	127	5	96	113	0	111	134	2	100
Non-Binary							0	0	0
White	376	6	244	432	11	343	459	8	318
Non-White	17	1	32	22	1	31	22	3	25
Hispanic	20	1	17	20	1	23	14	1	22
AA Black	2	2	7	4	0	2	3	3	2
AI AN	3	0	0	0	0	3	6	0	1
Asian	0	0	2	0	0	0	3	0	1
Multi	2	0	0	3	0	5	5	0	1
NH PI	0	0	0	1	0	1	0	0	0
Other	0	0	6	0	0	0	0	0	0
Unknown	10	0	25	23	0	0	20	0	37
Institutions Reporting	41	6	42	42	5	43	42	5	48

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

Objective Four

Objective four offered a comprehensive overview of the scope of SBAE programs across the United States. The tracking of school-based agricultural education programs in the U.S. dates to 1918, one year after the Smith-Hughes Vocational Education Act of 1917 was enacted. According to the Federal Board of Vocational Education's 1921 report, there were 609 programs at that time. Table 19 shows the total number of programs, and total number of teachers reported from 2011 to 2019.

Table 19

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

Note1: Discrepancies between years 2015 and 2016 are due to nonresponse/incorrect reporting.
Note2: In 2023, the NSD Team transitions to an online dataset with increased date quality protocols; thus, information may not align with previously published data.

Gender of School-Based Agricultural Education Teachers

In response to feedback from stakeholders, the National Supply and Demand Project began collecting data on the gender of school-based agricultural education teachers in 2015. To further enhance our data collection, we introduced a non-binary gender option in 2019, alongside Male, Female, and other categories. Table 20 presents the frequencies and percentages of each gender category for each year. Between 2017 and 2019, 46% of school-based agricultural education teachers reported were female, while 54% were male.

Table 20

Gender of School-Based Agricultural Education Teachers

	2017		2018		2019		
Year	*f*	%	*f*	%	*f*	%	Total %
Female	5582	44.9%	6099	45.5%	6211.5	47.7%	46%
Male	6782	54.5%	7250	54.1%	6797	52.1%	54%
Non-Binary					6	0.0%	0%
Other	76	0.6%	63	0.5%	20	0.2%	0%
Total	12440	100.0%	13412	100.0%	13034.5	100.0%	100%

Race of School-Based Agricultural Education Teachers

In 2017, we began asking key state contacts reporting on the school-based agricultural education teachers in their state (typically, a member of the state staff for agricultural education) to report the race of school-based agricultural education teachers. Reflective of the literature, a substantial majority (over 70%) of the educators were identified as white across the three years. It should be noted that there was a significant decrease in the reported African American and Hispanic Teachers from 2017 to 2019.

Table 21

Race of School-Based Agricultural Education Teachers

	2017		2018		2019	
Year	*f*	%	*f*	%	*f*	%
Asian	18	0.1%	11	0.1%	17	0.1%
AA	206	1.5%	184	1.5%	138	1.2%
AI/AN	96	0.7%	86	0.7%	113	1.0%
Multi	14	0.1%	44	0.4%	42	0.4%
Hispanic	282	2.1%	293	2.4%	219	1.9%
Other	2	0.0%	8	0.1%	13	0.1%
NH/PI	4	0.0%	2	0.0%	7	0.1%
White	10524	78.6%	9407	76.5%	8568	73.1%
Unknown	224	1.7%	245	2.0%	580	5.0%
Total	11370	100.0%	10280	100.0%	9697	100.0%

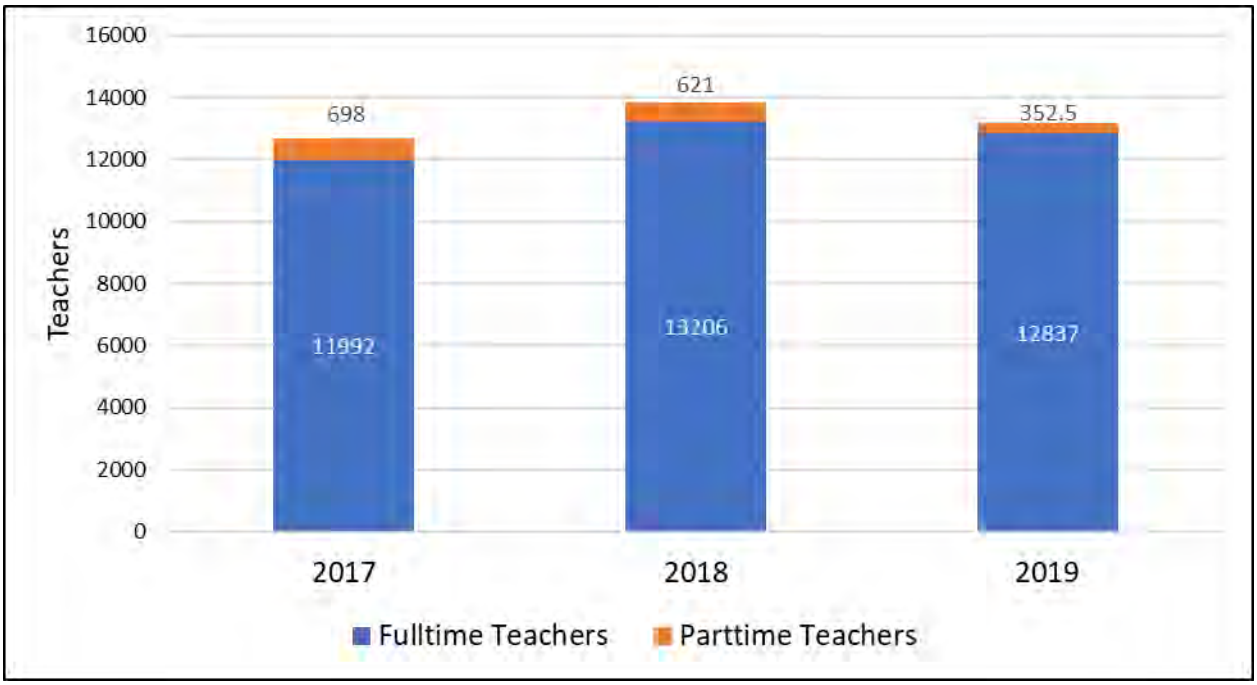
Note. AA=African American, AI/AN= American Indian/Alaska Native, NH/PI= Native Hawaiian/Pacific Islander

Employment Status of School-Based Agricultural Education Teachers

As reported in previous studies, most school-based agricultural education teachers are employed as full-time teachers, with less than 5% employed as part-time (see Figure 20).

Figure 21

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



Source of New Hires in School-Based Agricultural Education

From 2017 to 2019, U.S. school-based agricultural education (SBAE) teachers identified as new hires represented 13.6% of all US SBAE teachers. Nationally, an average of 8% of teachers transfer between schools, while another 8% leave the profession altogether (Taie & Lewis, 2023). Among the new hires, 4.3% were teachers moving from one school to another, and nearly 10% were either first-time teachers or returning to the profession. Table 22 highlights the reported sources of these new hires, revealing that the majority come from in-state program completers at the undergraduate or graduate level. This group is followed by in-state teachers transitioning to a new school.

With input from stakeholders, the AAAE National Supply and Demand research team concluded that the operational definitions for non-licensed and/or alternative licensed varied widely state to state, thus in 2016, the option of alternative licensure was added to the instrument. Note the change in non-licensed and alternatively licensed new hires ranging from 14.5% non-licensed in 2014 to 22.9% non-licensed and alternatively licensed teachers combined in 2016 when this option was added. From 2017 to 2019, approximately one-fourth (or 25%) of all new hires were considered alternative licensure or non-licensed teachers.

Table 22

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

	2017		2018		2019	
Year	*f*	%	*f*	%	*f*	%
Moved	602	36%	443	30%	400	28%
Grad in State	101	6%	118	8%	79	6%
UG in State	357	21%	418	28%	391	28%
UG out State	64	4%	66	4%	60	4%
Grad Out of State	18	1%	16	1%	6	0%
Alternative	354	21%	283	19%	225	16%
Non-Licensed	106	6%	91	6%	141	10%
Other	37	2%	14	1%	15	1%
Unknown	28	2%	45	3%	89	6%
Total	1667	100%	1494	100%	1406	100%

Note 1. States reporting include: 46 (2017); 46 (2018); 41 (2019).
Note 2. For comparison, total U.S. SBAE teachers include: 12,682 (2017); 10,502 (2018); 10,466 (2019)

Table 23 directly examines all sources of new hires combined, in relation to the number of program completers (traditionally prepared) produced on an annual basis by university agricultural teacher preparation programs. It should be noted that approximately half of new hires on an annual basis from 2017-2019 come from university agricultural teacher preparation programs.

Table 23

Comparison of Traditionally Prepared Hires to Other Sources

	2017		2018		2019		Total	
Source	*f*	%	*f*	%	*f*	%	*f*	%
Program Completers	540	51%	618	59%	536	53%	1694	54%
Other Sources	525	49%	433	41%	470	47%	1428	46%
Total New Hires	1065	100%	1051	100%	1006	100%	3122	100%
Total Teachers	12690		13827		13190			
New Hires as a Percent of Total Teachers	8.4%		7.6%		7.6%			
States Reporting	46		46		41			

Note. Total does not include teachers that moved.

New Positions and Programs in School-Based Agricultural Education

Table 24 identifies the number of new school-based agriculture teaching positions and new SBAE programs added from 2017 to 2019, in total and by AAAE region. From 2017 to

2017, 427 school-based agriculture teaching programs were added, and 738 new school-based agricultural education positions were reported.

Table 24

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

Year	AAAE Region	Total Positions	New Positions	Total Programs	New Programs
2017	North Central	3500	48	2670	58
	Southern	5691	95	3534	72
	Western	2006	73	1215	25
	Total	**11197**	**216**	**7419**	**155**
2018	North Central	3735	68	2827	56
	Southern	6702	154	4117	61
	Western	2211	54	1268	15
	Total	**12648**	**276**	**8212**	**132**
2019	North Central	4529	134	3331	75
	Southern	3120	50	2269	43
	Western	2404	62	1324	22
	Total	**10053**	**246**	**6924**	**140**

Positions and Programs Lost in School-Based Agricultural Education

From 2017 to 2019, 210 school-based agricultural education positions were lost, and 115 programs were reported as closed. A variety of responses were given to explain program closure or position elimination. Acknowledging such decisions are typically a result of local district decisions, reasons provided included: changing Career and Technical Education focus, student interest, political pressures, and community support. Table 25 shows the number of positions and programs lost by year organized by AAAE region.

Table 25

School-Based Agricultural Education Teaching Positions and SBAE Programs Lost

Year	AAAE Region	Total Positions	Positions Lost	Total Programs	Programs Lost
2017	North Central	3500	15	2670	9
	Southern	5691	30	3534	26
	Western	2006	17	1215	9
	Total	**11197**	**62**	**7419**	**44**
2018	North Central	3735	12	2827	7
	Southern	6702	29	4117	19
	Western	2211	38	1268	11
	Total	**12648**	**79**	**8212**	**37**
2019	North Central	4529	22	3331	12
	Southern	3120	14	2269	7
	Western	2404	33	1324	15
	Total	**10053**	**69**	**6924**	**34**

Table 26 and Table 27 present data showing the annual net gain in both school-based agricultural education positions and programs. From 2017-2019, increases were observed across the U.S. in the number of school-based agricultural education positions (277 positions, approximately a 3% increase) and the number of school-based agricultural educator programs (148 programs, approximately 2% increase).

Table 26

Net School-Based Agricultural Education Teaching Positions

Year	AAAE Region	Total Positions	Positions Lost	New Positions	Net Positions
2017	North Central	3500	15	48	15
	Southern	5691	30	95	47
	Western	2006	17	73	28
	Total	**11197**	**62**	**216**	**90**
2018	North Central	3735	12	68	7
	Southern	6702	29	154	89
	Western	2211	38	54	7
	Total	**12648**	**79**	**276**	**103**
2019	North Central	4529	22	134	59
	Southern	3120	14	50	12
	Western	2404	33	62	13
	Total	**10053**	**69**	**246**	**84**

Table 27

Net School-Based Agricultural Education Programs

Year	AAAE Region	Total Programs	Programs Lost	New Programs	Net Programs
2017	North Central	2670	9	58	4
	Southern	3534	26	72	42
	Western	1215	9	25	12
	Total	**7419**	**44**	**155**	**58**
2018	North Central	2827	7	56	12
	Southern	4117	19	61	27
	Western	1268	11	15	-3
	Total	**8212**	**37**	**132**	**36**
2019	North Central	3331	12	75	35
	Southern	2269	7	43	20
	Western	1324	15	22	-1
	Total	**6924**	**34**	**140**	**54**

Vacancies reported for this period were down slightly from the 242 reported in 2014-2016, and represent less than 0.6% of total positions. Part-time positions represent only 8% of total vacancies.

Table 28

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

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

Individuals supplying demand data (typically, state agricultural education staff) were asked to report reasons for school-based agricultural education positions lost during the reporting period. While not all states provided this information, and findings should not be generalized to all states, those reporting across the three years suggested the leading reason positions were lost was an inability to find a teacher. The next most common reason indicated was declining enrollment followed by "other". Table 29 lists the reported reasons for lost school-based agricultural education positions.

Table 29

Reasons for Lost Positions

Year	2017		2018		2019	
States Reporting	24		22		26	
Total Programs	4846		4546		4338	
Total Teachers	8038		7801		6617	
No Teachers	21	29%	32	36%	19	27%
Enrollment	14	19%	26	30%	18	27%
Funding	12	17%	1	1%	4	6%
Other	20.7	29%	11	13%	17	24%
Unknown	4	6%	10	11%	11	16%
Total	72	100%	88	100%	70	100%

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

From 2017-2019, data suggests that approximately 2,196 teachers left the school-based agricultural education profession. The range of departures reported on an annual basis was from 594.8 to 900. Table 30 highlights the reported reasons for teachers leaving the classroom. Consistent with the 2014-2016 annual report, the top three reasons included retirement, work in agribusiness or industry, and termination.

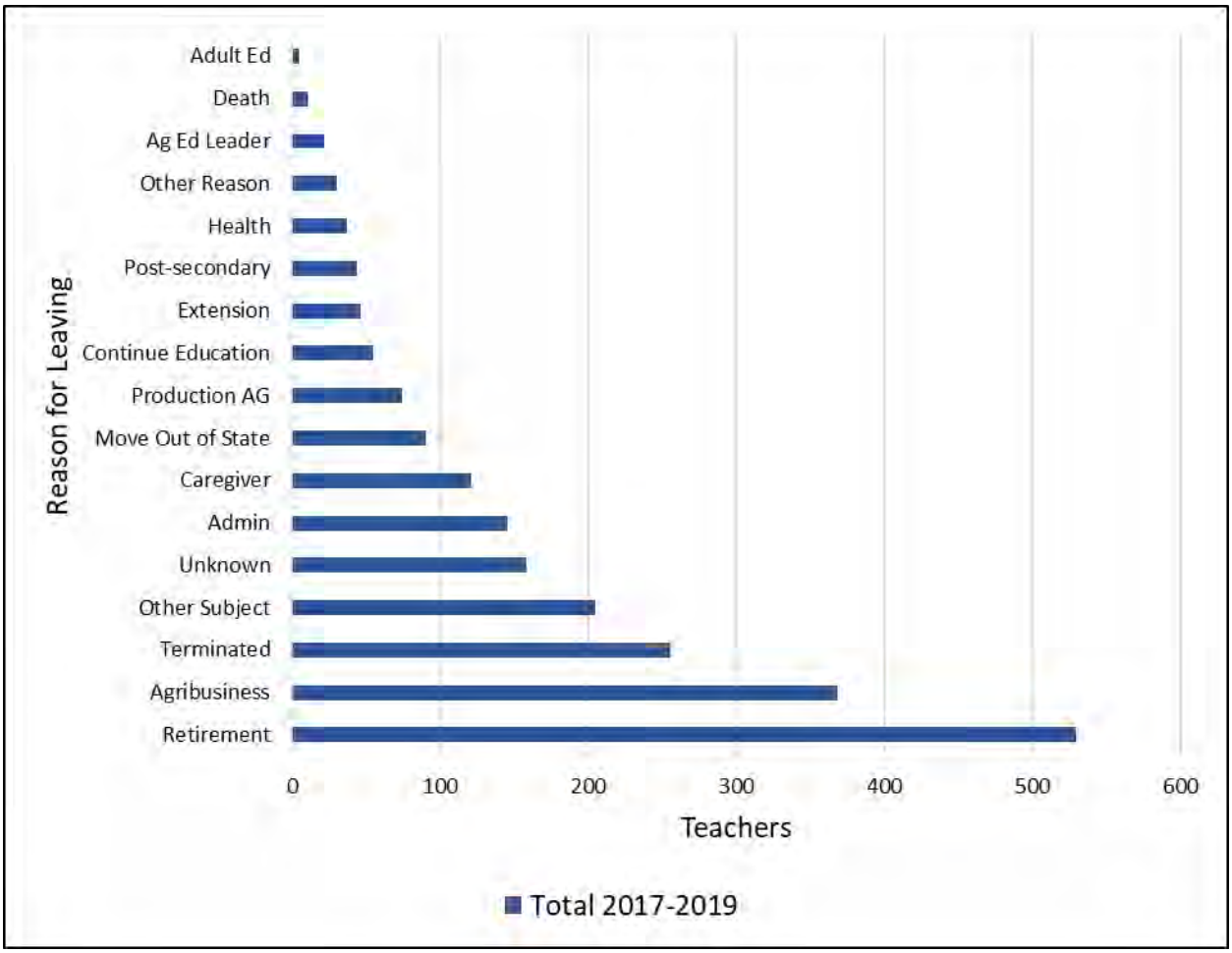
Table 30

Number of School-Based Agricultural Education Teachers Leaving the Classroom

	2017		2018		2019		Total	Percent
Year	*f*	%	*f*	%	*f*	%	N	%
States	45		48		45			
Retirement	157	22%	223	25%	149	25%	529	24%
Agribusiness	128	18%	164	18%	76	13%	368	17%
Terminated	93	13%	91	10%	71.8	12%	255.8	12%
Other Subject	67	10%	75	8%	63	11%	205	9%
Unknown	28	4%	65	7%	65	11%	158	7%
Admin	41	6%	71	8%	33	6%	145	7%
Caregiver	38	5%	62	7%	21	4%	121	6%
Move Out of State	34	5%	32	4%	24	4%	90	4%
Production AG	21	3%	30	3%	23	4%	74	3%
Continue Education	22	3%	17	2%	16	3%	55	3%
Extension	21	3%	13	1%	12	2%	46	2%
Post-secondary	15	2%	19	2%	10	2%	44	2%
Health	11	2%	16	2%	10	2%	37	2%
Other Reason	12	2%	7	1%	11	2%	30	1%
Ag Ed Leader	9	1%	7	1%	6	1%	22	1%
Death	2	0%	6	1%	3	1%	11	1%
Adult Ed	2	0%	2	0%	1	0%	5	0%
Total	701	100%	900	100%	594.8	100%	2195.8	100%

Figure 22

School-Based Agriculture Education Teachers Reasons for Leaving the Classroom



With one of the top three reasons for leaving the SBAE classroom reported as a career transition to agribusiness or industry, we wanted to explore compensation of agricultural educators. Individuals providing data were asked to share average salary and contract length for teachers in their respective states; many indicated they did not have access to this information so readers should be cautious in the interpretation of findings presented in Table 31.

Table 31

Average School-Based Agricultural Education Teacher Salary and Contract Length

Year	AAAE Region	States Reporting	States Reporting Salary	Avg Salary	States Reporting Contract	Average Contract (days)
2017	North Central	22	7	44139	13	198
	Southern	13	9	40893	13	211
	Western	12	2	43000	7	207
	Total	47	18	42389	33	205
2018	North Central	23	8	44978	11	201
	Southern	15	8	42226	12	213
	Western	13	7	42445	9	204
	Total	51	23	43250	32	207
2019	North Central	21	10	42396	15	206
	Southern	13	11	41944	13	226
	Western	13	8	41415	8	208
	Total	47	29	41954	36	214

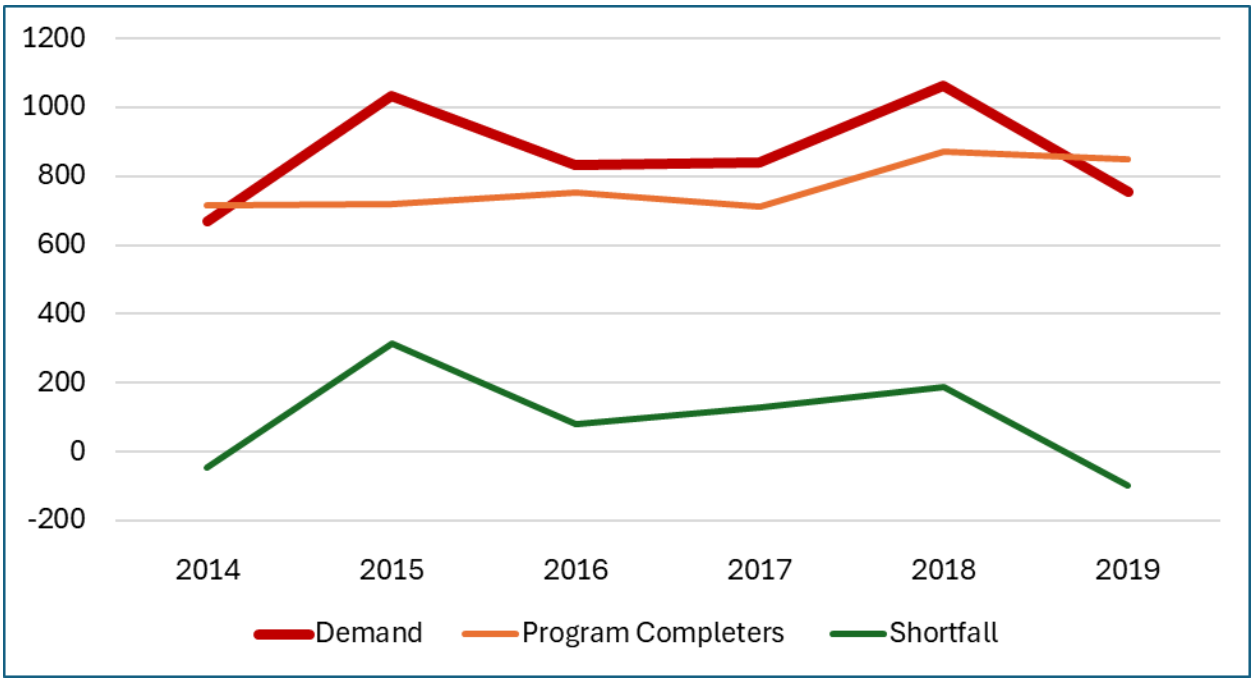
Note. Small numbers of states report these data.

Demand and Shortfall Metrics

In the 2014-2016 report, the AAAE National Supply and Demand research team presented a Demand Metric which allowed for the creation and calculation of a “Shortfall Score”. The Shortfall Score compares demand to the production of program completers. Note that both the demand and supply data are required for this calculation. In states with multiple preparation institutions, it is possible to have a shortfall score that will not include all programs completers. The National Demand (Figure 24) is a summary of all states combined. Table 32 reports the Shortfall Score by state.

Figure 23

National Demand - Shortfall Score



Note: States reporting both supply and demand data in 2014, 2015, 2016, 2017, 2018, and 2019 are 38, 39, 41, 42, 42, and 38 respectively. Incomplete demand data was assumed to be zero.

Table 32

Shortfall Score by State

State	2014	2015	2016	2017	2018	2019	2020	Grand Total
Alabama	13	29	13	22	6	17	10	110
Alaska			0					0
Arizona	3	-3	19	10	2	15	13	59
Arkansas	-6	1	8	-6	1	-2		-4
California	20	22	16	1	-43	-45	10	-19
Colorado	-4	7	14	10	7	-1	11	44
Connecticut	-1	-3	-3	-8	1	6	-4	-12
Delaware		-6		2		1	5	2
Florida	-20	7	10	26	39	-8	-15	39
Georgia	-17	8	13	2	22		-1	27
Idaho	2	5	-1	5	-2	8	-11	6
Illinois	30	27	14	15	18	27	22	153
Indiana	12	11	13	13	4	15	18	86
Iowa	-10	4	5	-11	4	-11	9	-10
Kansas	21	16	7	-1	13	18	-5	69
Kentucky	-9	-3	1	3	-4	-9	-7	-28

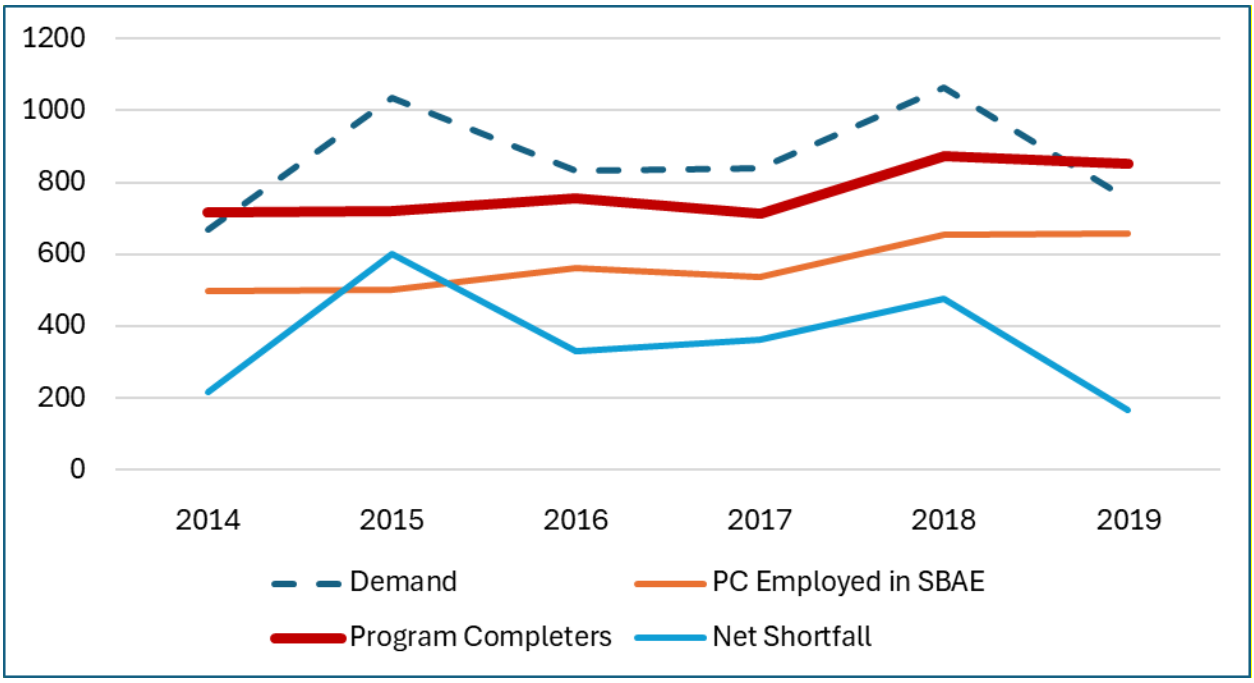
State	2014	2015	2016	2017	2018	2019	2020	Grand Total
Louisiana	7	13	-7	5	13	-6		25
Maryland			6	12	5	6	10	39
Michigan	1		0	3	7	2	6	19
Minnesota	8	11	-4	2	2	14.8	18	51.8
Mississippi	3	0	-8	1	6	-2	5	5
Missouri	-1	7	-8	-6	12	13	0	17
Montana	-5	2	-5	-9	-3	6	-2	-16
Nebraska	1	4	13	5	-1	0	14	36
Nevada	-1		-2		2	2	0	1
New Jersey				1				1
New Mexico	-12	-7	-13	-3	-6		-5	-46
New York	-10	2	5	1	-1	0	3	0
North Carolina	33	-7	2	-14	-14	-18	-22	-40
North Dakota	-1	9	4	-1	0	-1	-3	7
Ohio	4	37	13	11	6	14	-5	80
Oklahoma	-59	66	-3	-2	-1	16	2	19
Oregon	-7	10	5	3	4	9	5	29
Pennsylvania	-14	-10	-4	2	1	-1	3	-23
Puerto Rico					13	1		14
South Carolina	-5	-6	5	-3	-6	-4	-1	-20
South Dakota	3	0	-6	-7	-8	-6	0	-24
Tennessee	5.5	5.5	17	-3	4	3	0	32
Texas	-34	68	-61	22	70	-149	-134	-218
Utah	2	-2	9	4	5	-5	-3	10
Virginia		20.5	-2	2	6	14	30	70.5
Washington		-13		20	2	-25		-16
West Virginia	0	-9	-3	-9	-2			-23
Wisconsin	7	-3	0	7	2	-12	-6	-5
Wyoming	-5	-7	-3	1	3			-11
Grand Total	-45.5	313	79	128	189	-97.2	-30	536.3

*Not*e. Positive numbers indicate a shortfall of teachers in the state.

The Net Shortfall considers the yield of preparation programs. Unlike the Shortfall Score above it uses only the number of program completers that were employed in SBAE. This is a more accurate picture of the ability of US SBAE Teacher Education Programs to traditionally train and place teachers in positions. Figure 25 is a summary of all states. Table 33 shows the Net Shortfall by state.

Figure 24

National Demand Considering Only PCs taking SBAE Jobs



Note: Average yield is 74% from 2014-2019. States reporting both supply and demand data in 2014, 2015, 2016, 2017, 2018, and 2019 are 38, 39, 41, 42, 42, and 38 respectively. Incomplete demand data was assumed to be zero. Only 46% of states reported complete data for the demand calculation.

Table 33

Net Shortfall Score by State

State	2014	2015	2016	2017	2018	2019	Grand Total
Alabama	18	36	20	24	21	22	141
Arizona	5	-2	19	11	5	16	54
Arkansas	1	9	23	8	16	11	68
California	22	24	21	3	-39	-39	-8
Colorado	2	14	15	11	13	4	59
Connecticut	-1	0	0	-1	3	6	7
Delaware		0		2		2	4
Florida	-15	9	13	34	46	-3	84
Georgia	-10	13	17	5	34		59
Idaho	2	6	6	7	4	10	35
Illinois	31	31	20	20	23	38	163
Indiana	19	16	20	15	13	22	105

State	2014	2015	2016	2017	2018	2019	Grand Total
Iowa	-1	12	12	-1	8	5	35
Kansas	25	21	14	5	15	22	102
Kentucky	5	10	9	10	13	2	49
Louisiana	10	13	-5	10	14	-4	38
Maryland			7	13	5	7	32
Michigan	2		1	3	7	2	15
Minnesota	15	16	0	5	5	18.8	59.8
Mississippi	6	1	-6	3	11	6	21
Missouri	4	17	3	3	22	25	74
Montana	0	5	-1	-5	-1	8	6
Nebraska	4	6	13	6	5	5	39
Nevada	-1		-1		2	3	3
New Jersey				1			1
New Mexico	-3	1	-9	-2	-1		-14
New York	-2	2	5	2	-1	1	7
North Carolina	47	12	17	-6	-3	-7	60
North Dakota	2	10	7	3	2	4	28
Ohio	12	38	13	15	16	25	119
Oklahoma	-40	77	12	17	15	25	106
Oregon	-5	12	9	8	5	11	40
Pennsylvania	-3	4	5	8	8	6	28
Puerto Rico					17	8	25
South Carolina	-4	0	10	-3	-2	-2	-1
South Dakota	4	8	2	2	5	5	26
Tennessee	7.5	17.5	18	5	7	9	64
Texas	34	130	5	70	122	-98	263
Utah	5	5	9	7	9	3	38
Virginia		21.5	-2	9	6	14	48.5
Washington		-9		21	5	-25	-8
West Virginia	5	2	5	0	7		19
Wisconsin	15	11	7	13	9	0	55
Wyoming	-2	1	-2	3	7		7
Grand Total	215.5	600	331	364	478	167.8	2156.3

Table 34 compares the number of new hires reported from out-of-state by state staff to program completers reported as being employed in SBAE out-of-state by teacher educators. Negative numbers imply that the state is a net exporter of SBAE teachers. For this metric to be calculated, both supply and demand must be available for the year.

Total reported out-of-state hires were 224 and total program completers reported taking jobs out-of-state were 201. Since these numbers would be the same, if all new hires were recent program completers, nationally there may be up to an 11% error overall in reporting.

Table 34

Net Import of School-Based Agricultural Education Teachers

State	2017	2018	2019	Grand Total
Minnesota	6	3	11	20
Texas	18		-2	16
Idaho	-1	13	1	13
Iowa	2	5	4	11
Colorado	4	4	0	8
Virginia	4	0	3	7
Nebraska	4	2	1	7
Illinois	5	1	1	7
Georgia	2	4		6
Arizona	3	1	1	5
Kansas	2	1	1	4
Michigan	1	1	1	3
Indiana	0	2	1	3
New York	1	0	1	2
Nevada		2	0	2
Maryland	0	3	-1	2
Washington	-1	1	1	1
South Carolina	3	-1	-1	1
Florida	0	3	-2	1
Delaware	1		0	1
California	-1	0	2	1
Tennessee	1	0	-1	0
Puerto Rico		0	0	0
Oregon	-1	1	0	0
Ohio	2	-2	0	0
New Jersey	0			0
Montana	-1	1	0	0
North Dakota	-1	0	0	-1
New Mexico	0	-1		-1
North Carolina	0	2	-4	-2
Missouri	-4	0	1	-3
Connecticut	-3	0	0	-3
Arkansas	-2	-1	0	-3
Wyoming	0	-4		-4
West Virginia	-2	-2		-4
Mississippi	0	-2	-2	-4
Louisiana	-2	-1	-1	-4
Alabama	0	-3	-1	-4

State	2017	2018	2019	Grand Total
Kentucky	-2	-3	-1	-6
Wisconsin	-1	-2	-5	-8
Utah	-2	-3	-4	-9
Pennsylvania	-3	-3	-4	-10
Oklahoma	-7	-2	-2	-11
South Dakota	-4	-9	-8	-21
Grand Total	21	11	-9	23

Teacher Educators' Projected Progam Completer Estimates

Starting in 2014, agricultural teacher educators reporting supply data to the AAAE National Supply and Demand project were asked to report projected estimates of license-eligible program completers for the upcoming three years. Table 35 represents the number of predicted program completers, reported on an annual basis. There was approximately a 10% decrease observed from the predicted number of completers to the actual number of program completers.

Table 35

Agricultural Teacher Educator Supply Prediction Vs. Actual

Predicted Year	Actual PC	1 Yr Prediction PC	1 Yr Prediction %	2 Yr Prediction PC	2 Yr Prediction %	3 Yr Prediction PC	3 Yr Prediction %
2017		**2016**	**2016**	**2015**	**2015**	**2014**	**2014**
North Central	193	287	149%	211	109%	230	119%
Southern	359	434	121%	365	102%	417	116%
Western	112	158	141%	139	124%	140	125%
Total 2017	**664**	**879**	**132%**	**715**	**108%**	**787**	**119%**
2018		**2017**	**2017**	**2016**	**2016**	**2015**	**2015**
North Central	276	296	107%	313	113%	267	97%
Southern	364	400	110%	469	129%	440	121%
Western	145	162	112%	167	115%	139	96%
Total 2018	**785**	**858**	**109%**	**949**	**121%**	**846**	**108%**
2019		**2018**	**2018**	**2017**	**2017**	**2016**	**2016**
North Central	285	299	105%	303	106%	239	84%
Southern	385	441	115%	418	109%	388	101%
Western	147	155	105%	168	114%	115	78%
Total 2019	**817**	**895**	**110%**	**889**	**109%**	**742**	**91%**
2020		**2019**		**2018**		**2017**	
North Central		268		287		311	
Southern		359		406		405	

Predicted Year	Actual PC	1 Yr Prediction PC	%	2 Yr Prediction PC	%	3 Yr Prediction PC	%
Western		143		153		131	
Total 2020		**770**		**846**		**847**	
2021				**2019**		**2018**	
North Central				287		312	
Southern				410		464	
Western				108		107	
Total 2021				**805**		**883**	
2022						**2019**	
North Central						292	
Southern						446	
Western						114	
Total 2022						**852**	

Other Common Metrics

In addition to the data reported above, several other common metrics are used within education to describe teacher movement (Bailey et al., 2021). As such, these are useful when comparing SBAE data to other research and scholarship efforts related to teacher supply and demand.

These metrics are reported in Table 36, with the calculations utilized listed below.

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 36

Common Metrics

Year	State	Attrition	Mobility	Retention	Replacement Rate
2017	Alabama	8.7%	5.5%	91.3%	10.0%
2018	Alabama	10.6%	7.0%	89.4%	9.6%
2019	Alabama	7.9%	2.3%	92.1%	
2017	Alaska	8.3%	8.3%	91.7%	-8.3%
2018	Alaska	13.3%	6.7%	86.7%	
2019	Alaska	6.3%	6.3%	93.8%	0.0%
2017	Arizona	8.5%	2.8%	91.5%	
2018	Arizona	9.4%	4.7%	90.7%	9.4%
2019	Arizona	13.3%	8.9%	86.7%	16.8%
2017	Arkansas	6.0%	8.2%	94.0%	7.8%
2018	Arkansas	7.8%	7.8%	92.2%	
2019	Arkansas	7.0%	5.3%	93.0%	7.0%
2017	California	4.5%	7.1%	95.5%	6.9%
2018	California	3.1%	6.8%	96.9%	3.3%
2019	California	0.3%	5.4%	99.7%	2.6%
2017	Colorado	10.0%	5.7%	90.0%	
2018	Colorado	12.5%	6.6%	87.5%	
2019	Colorado	9.2%	5.6%	90.9%	9.2%
2017	Connecticut		1.7%		
2018	Connecticut	2.7%	2.7%	97.3%	
2019	Connecticut	6.8%	6.8%	93.2%	
2017	Delaware	6.9%	0.0%	93.1%	5.6%
2018	Delaware	12.5%	5.6%	87.5%	8.3%
2019	Delaware	4.3%	0.0%	95.7%	4.3%
2017	Florida	8.0%	0.7%	92.1%	
2018	Florida	9.0%	1.6%	91.0%	12.6%
2019	Florida	3.2%	0.0%	96.8%	
2017	Georgia	3.9%	10.3%	96.1%	4.3%
2018	Georgia	7.6%	7.4%	92.4%	10.8%
2019	Hawaii	9.1%	0.0%	90.9%	4.6%
2017	Idaho	2.2%	3.6%	97.8%	
2018	Idaho	2.8%	3.5%	97.2%	
2019	Idaho	8.0%	5.3%	92.0%	
2017	Illinois	7.8%	6.0%	92.2%	
2018	Illinois	7.9%	5.2%	92.1%	
2019	Illinois	9.7%	4.4%	90.3%	12.3%
2017	Indiana	6.3%	2.6%	93.7%	
2018	Indiana	10.3%	7.1%	89.7%	11.4%
2019	Indiana	7.0%	4.9%	93.0%	
2017	Iowa	5.6%	5.6%	94.4%	5.2%
2018	Iowa	7.4%	5.0%	92.6%	

Year	State	Attrition	Mobility	Retention	Replacement Rate
2019	Iowa	7.3%	0.0%	92.8%	9.2%
2017	Kansas	8.4%	6.7%	91.6%	
2018	Kansas	12.0%	7.7%	88.0%	
2019	Kansas	11.7%	8.5%	88.3%	
2017	Kentucky	9.5%	5.0%	90.5%	9.9%
2018	Kentucky	10.5%	7.1%	89.5%	10.9%
2019	Kentucky	9.7%	8.6%	90.3%	10.5%
2017	Louisiana	4.0%	0.8%	96.0%	
2018	Louisiana	5.9%	2.8%	94.1%	
2019	Louisiana	2.3%	1.1%	97.7%	
2017	Maine	0.0%	0.0%	100.0%	
2018	Maine	16.7%	0.0%	83.3%	
2019	Maine	0.0%	0.0%	100.0%	
2017	Maryland	16.9%	5.2%	83.1%	16.9%
2018	Maryland	8.1%	2.7%	91.9%	
2019	Maryland	4.0%	4.0%	96.0%	
2019	Massachusetts	1.4%	0.0%	98.6%	1.4%
2017	Michigan	1.6%	3.1%	98.5%	3.1%
2018	Michigan	4.4%	1.5%	95.6%	
2019	Michigan	5.4%	1.5%	94.6%	6.2%
2017	Minnesota	3.2%	3.6%	96.8%	4.4%
2018	Minnesota	3.2%	2.8%	96.8%	3.6%
2019	Minnesota	4.9%	4.9%	95.1%	11.0%
2017	Mississippi	2.6%	52.0%	97.4%	2.6%
2018	Mississippi	9.9%	2.8%	90.1%	10.6%
2019	Mississippi	6.1%	0.0%	93.9%	
2017	Missouri	4.8%	4.2%	95.2%	5.6%
2018	Missouri	8.5%	5.8%	91.5%	
2019	Missouri	7.1%	3.0%	92.9%	8.4%
2017	Montana	1.0%	2.1%	99.0%	0.0%
2018	Montana	4.0%	4.0%	96.0%	
2019	Montana	9.6%	4.8%	90.4%	11.5%
2017	Nebraska	6.9%	3.7%	93.1%	
2018	Nebraska	11.0%	2.5%	89.0%	12.0%
2019	Nebraska	9.7%	3.9%	90.3%	11.1%
2017	Nevada	8.6%	0.0%	91.4%	5.7%
2018	Nevada	3.0%	0.0%	97.0%	9.1%
2019	Nevada	5.3%	0.0%	94.7%	
2017	New Hampshire	3.8%	0.0%	96.2%	
2018	New Hampshire	14.3%	0.0%	85.7%	10.7%
2019	New Hampshire	7.1%	0.0%	92.9%	
2017	New Jersey	6.8%	1.7%	93.2%	3.4%
2018	New Jersey	20.3%	0.0%	79.7%	
2019	New Jersey	11.1%	0.0%	88.9%	11.1%
2017	New Mexico	1.9%	2.9%	98.1%	

Year	State	Attrition	Mobility	Retention	Replacement Rate
2018	New Mexico	5.8%	3.9%	94.2%	3.9%
2019	New Mexico	10.2%	3.1%	89.8%	11.2%
2017	New York	3.4%	2.6%	96.6%	
2018	New York	1.4%	0.0%	98.6%	
2019	New York	2.3%	3.0%	97.7%	
2017	North Carolina	4.2%	0.0%	95.8%	4.0%
2018	North Carolina	3.9%	0.4%	96.1%	4.4%
2019	North Carolina	5.4%	8.1%	94.6%	6.5%
2017	North Dakota	10.9%	3.3%	89.1%	
2018	North Dakota	6.3%	2.1%	93.8%	
2019	North Dakota	10.5%	5.3%	89.5%	
2018	Ohio	5.3%	0.0%	94.7%	
2019	Ohio	3.8%	3.0%	96.2%	6.8%
2017	Oklahoma	6.7%	8.3%	93.3%	7.9%
2018	Oklahoma	6.2%	0.0%	93.8%	
2019	Oklahoma	9.1%	9.5%	91.0%	
2017	Oregon	8.3%	5.8%	91.7%	10.8%
2018	Oregon	7.3%	3.6%	92.8%	
2019	Oregon	7.5%	1.4%	92.5%	
2017	Pennsylvania	3.4%	3.0%	96.6%	4.7%
2018	Pennsylvania	4.2%	2.5%	95.8%	5.0%
2019	Pennsylvania	4.7%	1.7%	95.3%	5.1%
2019	Puerto Rico	1.5%	0.0%	98.5%	
2017	Rhode Island	10.0%	0.0%	90.0%	
2018	Rhode Island		0.0%		
2017	South Carolina	2.3%	6.2%	97.7%	3.1%
2018	South Carolina	1.5%	12.4%	98.5%	
2019	South Carolina	2.1%	6.3%	97.9%	3.5%
2017	South Dakota	6.7%	4.4%	93.3%	
2018	South Dakota	12.8%	2.0%	87.3%	11.8%
2019	South Dakota	11.5%	4.8%	88.5%	11.5%
2017	Tennessee	4.2%	2.5%	95.8%	3.4%
2018	Tennessee	5.3%	2.1%	94.7%	6.5%
2019	Tennessee	5.7%	1.7%	94.3%	6.2%
2017	Texas	6.8%	5.5%	93.2%	8.2%
2018	Texas	8.6%		91.4%	10.8%
2019	Texas	0.4%	0.0%	99.6%	0.4%
2017	Utah	6.3%	2.1%	93.7%	9.9%
2018	Utah	8.7%	4.0%	91.3%	9.4%
2019	Utah	9.5%	7.0%	90.5%	10.8%
2017	Virginia	6.5%	0.4%	93.5%	
2018	Virginia	3.6%	4.0%	96.4%	
2019	Virginia	4.1%	1.9%	95.9%	
2018	Washington	2.4%	4.0%	97.6%	
2019	Washington	1.9%	0.6%	98.1%	-2.8%

Year	State	Attrition	Mobility	Retention	Replacement Rate
2017	West Virginia	2.8%	0.0%	97.2%	2.8%
2018	West Virginia	10.0%	0.0%	90.0%	
2017	Wisconsin	5.5%	3.6%	94.5%	6.5%
2018	Wisconsin	7.0%	0.0%	93.0%	7.0%
2019	Wisconsin	5.4%	1.6%	94.6%	
2017	Wyoming	5.4%	5.4%	94.6%	
2018	Wyoming	12.3%	5.3%	87.7%	
2019	Wyoming	5.0%	1.7%	95.0%	
Average		6.7%	3.8%	93.3%	7.0%

Note. Where metric is missing data was not provided by the state.

Conclusions, Discussion, and Implications

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). Conclusions, Discussions, and Implications along with recommendations for both practice and research are included.

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

In Objective one, we worked to describe the historical trends of Full Time Equivalent Faculty, School-Based Agricultural Teacher Preparation Program Completers, and School-Based Agricultural Education Teachers.

Full Time Equivalent Faculty

For over a century, teacher preparation has been an integral part of university-based agricultural education programs. Through collaborative efforts of teachers, state supervisors, and university faculty, agriculture teacher preparation programs have served as the primary source of school-based agricultural education teachers in the U.S. The number of programs in agriculture teacher preparation in the U.S. are at historic highs. Darling-Hammond and Baratz-Snowden (2007) and others have stressed the importance of quality preparation in producing effective teachers. Key to this effort is having adequate faculty to provide the needed coursework, supervision and mentoring. Additionally, agricultural education teacher preparation is different from other subjects in that it extends beyond classroom instruction and management. School-based agricultural education teachers are asked to manage programs, including the integral components of Supervised Agricultural Experience (SAE) and leadership development/FFA. These essential aspects of agricultural education teacher preparation may be lacking within alternative certification pathways.

Nonetheless, a steady decrease in full-time employment and full-time tenure-track positions in agricultural teacher education has been observed and documented. Over the last 20 years, significant growth has occurred in the number of part- or full-time nontenure track

positions at American colleges and universities (Anderson, 2002; Baldwin & Chronister, 2001; Conley et al., 2002; Ehrenberg, 2004; Ehrenberg & Zhang, 2004). The substitution or addition of contingent faculty for tenure-track faculty is often due to budget constraints, decreasing state support, retirements, and changing enrollment patterns (Green, 2007). In agricultural teacher preparation, we see a shift from ranked faculty from 1998 to 2017. In 1998, Camp reported that 74% of the total faculty was comprised of tenure-track (ranked) faculty, while in 2017, the ratio had decreased to 69%.

In 2014, 38% of reporting institutions had 1 or fewer FTE faculty, and 67% had 2 FTE faculty or fewer. In 2017, the number of institutions with one or fewer FTE faculty has dropped to 30% and those with 2 FTE or fewer dropped to 66%. This shift suggests that smaller programs are gaining some FTE faculty while overall programs are losing FTE faculty. When comparing 2014 to 2017, 28 of the 78 (36%) universities that reported in both years reported a loss of FTE faculty.

Between 1995 and 2017 the number of program completers increased by 16%. During the same period FTE faculty decreased by 37%. The trend of increasing PC/Faculty ratios is disturbing. The future of agricultural education teacher preparation programs requires additional support for the training and development of future SBAE teachers. Decreasing the PC/Faculty ratio is an important aspect of that support. It is important to recognize that the preeminent concern of both the public and policymakers is the effectiveness of educators in leading their students to high and increasing levels of achievement (American Psychological Association [APA], 2014).

School-Based Agricultural Teacher Preparation Program Completers

In an ideal scenario, the demographics of agricultural education teachers would closely reflect those of the students enrolled in school-based agriculture courses, fostering connections through shared identities and experiences rooted in homophily. Cherng and Halpin (2016) emphasize the importance of teacher diversity, demonstrating that students across all demographic groups report more favorable perceptions of minority teachers. This highlights the need to cultivate greater diversity within the teacher pipeline. Similarly, Egalite et al. (2015) found significant benefits, particularly for low-performing students, when they were taught by race-congruent teachers, further underscoring the value of representation and diversity in education.

Nationally, program completers of agricultural education teacher preparation programs are almost 75% female. Since program completers comprised 53% of the new hires in SBAE in 2019, this gender shift is moving the broader teacher population in the same direction. We know that secondary students are roughly 50% male and 50% female. At colleges of agriculture in 2002, female students accounted for 58%, although by 2019 this had risen to 63% (FAEIS, 2023).

While colleges are becoming increasingly female, a significant discrepancy remains between the gender composition of colleges and that of program completers (PCs).

This continued shift may have additional impact on the delivery of SBAE programs and pathways in which the student population is largely male – such as agricultural mechanics.

Race is not so clear cut as diversity in this area varies widely by state. Given regional demographics, it is understandable that SBAE students, and program completers, in California do not look like SBAE students, and program completers, in Iowa. Program completer diversity decreased between 2014 and 2019 from 14% non-white to 12% non-white. The regional difference is striking. Non-white program completers declined in the North Central and Western regions from 11% to 3%, and 13% to 10% respectively between 2014 and 2019. Over the same period, in the Southern region, non-white representation increased from 15% to 19%. Nationally, within colleges of agriculture the percentage of non-white students has increased from 25% in 2002 to 37% in 2019 (FAEIS, 2023). However, agricultural education teacher preparation program completers have not followed this trend. This is an area in which research is recommended, as teacher preparation institutions could use such data to guide programmatic recruiting practices.

School-Based Agricultural Education Teachers

The number of SBAE teachers increased on average, 2% per year over the last decade. During the same timeframe, program completers increased by 39%, yet only account for 53% of new hires in 2019 (down from 66% in 2014). Between 2014-2016 the number of vacant positions trended downward. Clearly, across the nation, alternatively prepared teachers are accounting for an increased proportion of new SBAE hires. What impact, if any, this may have on SBAE programming and instruction long-term, is unknown. At a minimum, the acknowledgement of the diverse needs of traditionally and alternatively prepared SBAE teachers seems to suggest a need for teacher preparation institutions and related organizations to provide targeted professional development opportunities.

The project team recognizes that the observed increase in SBAE teachers may be influenced by multiple factors, including enhancements to the design, development, and restructuring of the Supply and Demand instrument, as well as the ongoing partnership with National FFA Local Program Success staff and NAAE, which has enabled the collection of more accurate data. To address the ongoing need for a robust and stable agricultural teacher workforce, stakeholders must commit to a comprehensive, long-term solution. Key recommendations include sustained support for and utilization of the National Teach Ag Campaign, along with targeted recruitment efforts led by inservice teachers and teacher educators.The yield of license-eligible program completers accepting a school-based agricultural education teaching position has had an observable upward trend. The yield has risen from a low of 41% in 1985 to an all-time high of 77% in 2019. This change has a significant positive impact on placing traditionally prepared SBAE teachers in classrooms. Perhaps this increased yield has been impacted by the nature of majors and programs at institutions offering teacher preparation in agricultural education. With the creation of stand-alone majors in agricultural communication, agricultural leadership, etc., are the license-eligible students in agricultural education programs more likely to enter SBAE?

Objective 2: Describe Agricultural Teacher Preparation Programs in the United States

For objective two, we describe School-Based Agricultural Education Tacher Preparation Faculty and Programs, Student Teaching Internships, Teacher Licensure and Non-Teaching Option, Degrees Offered, and Employment Yield.

School-Based Agricultural Education Teacher Preparation Faculty and Programs

The data indicate a stable distribution of SBAE programs, faculty, and degrees across the different types of colleges, with colleges of agriculture maintaining a predominant role. This trend remained consistent from 2014 to 2017. Still, other SBAE programs and faculty are dispersed throughout a variety of colleges, including education, science, and others. Strengthening collaboration across departments and facilitating an integrated and comprehensive SBAE teacher program is important for all SBAE programs.

There is a diverse distribution of faculty within SBAE programs across the three AAAE regions. The Southern region consistently reports the highest number of faculty members, particularly at the full professor level, while the Western region has the fewest. This trend has remained consistent. Over the years (from 2009 to 2017), there has been a general decrease in the total number of faculty members. However, specific roles such as assistant and associate professors have shown fluctuations, indicating shifting hiring patterns and possibly changing priorities within academic institutions. There is a noticeable increase in the number of clinical instructors and graduate teaching assistants (TAs) from 2014 to 2017. This may suggest a trend towards more specialized and supportive teaching roles within SBAE teacher preparation programs.

Student Teaching Internships

The student teaching internship represents a critical aspect of SBAE teacher preparation programs. The data from 2017 reveals that most institutions offer these culminating internships during the spring semester. While a significant portion also provide internship opportunities in the fall semester, very few programs offer them exclusively in the fall or follow a quarter system schedule. The spring semester emerges as the most widely utilized timeframe for facilitating student teaching experiences across SBAE teacher preparation programs. Ensuring robust internship placements during this peak period is likely a key priority for many institutions to effectively prepare the next generation of agricultural educators.

Teacher Licensure and Non-Teaching Options

A significant majority of SBAE teacher preparation programs require all agricultural education majors to complete teacher licensure requirements. This indicates a strong focus on preparing students for teaching careers. Yet, a notable proportion of programs offer non-teaching options, reflecting a recognition of diverse career paths within agricultural education. The range of non-teaching minors and specializations demonstrates program flexibility, catering to students who may not pursue traditional teaching careers but are interested in agricultural education (broadly defined) such as communication, leadership, and extension. Such flexibility allows institutions to meet the needs of all students and adapt to changing industry demands. At a minimum, interdisciplinary collaboration within and between departments to enrich the

curriculum and provide students with a more holistic education is supported. For example, combining agricultural education with communication, leadership, or community development can create well-rounded graduates prepared for a variety of careers in agriculture, food, and natural resources.

Degrees Offered

Across 88 institutions, a broad array of degrees is offered, including bachelor's, master's, and doctoral levels. Bachelor's degrees (B.A. and B.S.) are widely available, with 86 institutions offering these programs. Specifically, 83 institutions offer a Bachelor of Science (B.S.) degree, highlighting the importance of a solid foundational education in agricultural sciences. Master's degrees are also prevalent, with 40 institutions offering Master of Science (M.S.) degrees, and additional specialized master's degrees such as Master of Agriculture (M.Ag.), Master of Education (MEd), and other master's programs available at various institutions. The Southern region reported the highest number of institutions, with a significant number of bachelor's and master's degrees. The Southern region also provides a diverse range of specialized master's and doctoral programs. The North Central region, while slightly behind the Southern region in total offerings, also has a robust selection of degrees, particularly at the bachelor's and master's levels. The Western region, although having fewer institutions, offers a substantial number of degrees relative to its size, including bachelor's, master's, and doctoral programs. Doctoral degrees (Ed.D. and Ph.D.) are less common but are available in each region. A total of 16 institutions offer Ph.D. programs, and 4 institutions provide Ed.D. programs, reflecting opportunities for advanced academic and professional pursuits in agricultural education. The variety of degrees offered by institutions that offer SBAE teacher preparation underscores the general commitment to cultivating well-prepared educators and professionals. This diversity in educational offerings supports the varied interests and career aspirations of students, contributing to the strength and sustainability of the agricultural education workforce.

Employment Yield

Over the six-year period from 2014 to 2019, the average percentage yield of program completers securing positions in SBAE across all regions is 73%. This indicates a relatively stable and robust placement rate for graduates. There are, however, notable regional differences in yield; the Western region consistently reports the highest yield rates, with percentages often exceeding 85%. Yet, the North Central and Southern regions have lower but relatively stable yield rates, ranging from 67% to 79%. The regional yield rates have shown slight fluctuations but generally indicate a positive trend in the Western region and stable performance in the North Central and Southern regions. The total number of program completers has increased, particularly in the North Central and Southern regions, which suggests growing interest and enrollment in agricultural education programs. Most program completers accept positions within their home state. Out-of-state placements are significantly less common, indicating a strong tendency for graduates to stay local, or pursue in-state preparation. This trend is consistent across all regions and years, with in-state placements forming the bulk of employment outcomes.

Given the strong preference for in-state employment, institutions should enhance partnerships with local schools and educational agencies to ensure ample job opportunities for graduates. Further, SBAE teacher preparation programs should develop targeted recruitment

strategies focused on connecting program completers with in-state teaching positions. For graduates willing to consider out-of-state positions, stakeholders should provide resources and support to help new teachers navigate relocation, certification, and the job search processes.

Considering the differences among regions, it may be beneficial for institutions to collaborate and share resources, best practices, and job placement networks. This could help with overall yield rates and support program completers in finding suitable positions. It is also important to monitor industry trends and demands for SBAE teachers to ensure that program curricula remain relevant and adapt to meet evolving requirements. Aimed at attracting more students to the field, it would be wise to launch awareness campaigns to highlight the benefits and career opportunities within SBAE, leverage alumni success stories and testimonials to inspire current students, and demonstrate the potential impact of a career in agricultural education.

Objective 3: Describe Characteristics of Licensed Program Completers

As part of objective three, we worked to describe the program completers including gender, race, and institutional type to better understand the characteristics of licensed program completers.

Program Completers

There is significant variability in the ratios of license-eligible program completers per FTE and per SBAE teacher preparation program across states. Colorado, for example, boasts a high ratio of completers per FTE (7.654), while Michigan has a much lower ratio (0.444). This disparity highlights differing efficiencies and capacities in agricultural teacher preparation programs. Generally, states with a greater number of institutions involved in SBAE teacher preparation, such as Texas and Missouri, tend to produce more completers. However, the number of institutions alone does not guarantee higher output, as seen in California and Ohio, which have fewer institutions but still yield a significant number of completers. The total FTE dedicated to SBAE teacher preparation is unevenly distributed, with states like Texas and California having a larger FTE correlating with higher number of program completers. In contrast, states with fewer FTE, such as Delaware and Connecticut, produce fewer completers.

States such as South Dakota and Texas demonstrate relatively high ratios of program completers to current school-based agricultural education programs, reflecting a stronger alignment between program output and workforce demands.

Additionally, some states, particularly those with fewer reporting institutions or lower FTE (e.g., Alaska, Hawaii, and Rhode Island), have incomplete data or lower production rates, highlighting potential regional disparities in the supply of agricultural education teachers.

To enhance the overall supply and distribution of school-based agricultural education teachers, several recommendations are proposed. States with low completer ratios per FTE, such as Connecticut and Michigan, should consider increasing full-time faculty dedicated to agricultural teacher preparation to enhance program completer output. States with lower numbers of reporting institutions should establish or expand agricultural teacher preparation programs to boost the overall supply of completers. States with low ratios of completers per FTE or per

program should review and potentially revise program structures and resource allocations to improve efficiency and output. Further, considering regional differences, providing targeted support and resources to states with low or incomplete data will ensure a more balanced national distribution of agricultural education teachers.

Gender, Race, and Institutional Type of School-Based Agricultural Education Program Completers

The data clearly indicates a consistent gender disparity with female program completers consistently outnumbering male completers each year. This trend suggests a significant gender imbalance within the field of agricultural education. SBAE teacher preparation programs, state associations, and other stakeholders should develop and implement targeted initiatives to encourage more male participation in agricultural education programs. This could include outreach programs, scholarships, and awareness campaigns to attract male students to the field. The majority of program completers are White, although there is a noticeable presence of non-White completers, including significant numbers of Hispanic and African American individuals. The proportion of non-White completers fluctuated over the years, reflecting some degree of racial diversity but also indicating potential variability in demographic representation. Continued efforts to increase racial diversity among program completers is warranted. Institutions should implement recruitment strategies aimed at underrepresented groups, providing support services and scholarships to encourage participation from a broader demographic base. Further, efforts should be made to establish a systematic approach to monitor and evaluate the effectiveness of recruitment and retention efforts for both gender and racial diversity. This will help in making data-driven decisions to further enhance the inclusivity and effectiveness of agricultural education programs.

The participation and contribution of institutions showed annual variability. While 1862 land grant institutions consistently had the highest numbers of program completers, non-land grant and private institutions followed closely. This highlights the pivotal role of 1862 land grant institutions in producing agricultural education program completers. There was notable difference in the total number of program completers over the three-year period, with peaks observed in 2018 and 2019. This indicates fluctuations in the number of individuals completing agricultural education programs annually. It might be advantageous for collaboration between 1862 land grant, 1890 land grant, and non-land grant institutions to share best practices and resources to minimize the variability of program completer numbers and enhance the overall quality and output of agricultural education programs.

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

To describe the scope of school-based agricultural programs in the United States in objective four, we described the Race and Gender of School-Based Agricultural Education Teachers, Sources of New School-Based Agricultural Education Teacher hires, Growing Positions and Programs, Predicated Program Completers as well as Shortfall and other metrics.

Race and Gender of School-Based Agricultural Education Teachers

The gender shift observed among agricultural teachers is a big change, from a historic perspective. For many years SBAE teachers were primarily male. At present, female teachers comprise 64% of the secondary teacher workforce across the nation (National Center for Education Statistics, 2023). In SBAE, we have seen a rapid shift in gender of total teachers driven by the large percentage of female PCs. The overall trend in SBAE teacher gender is moving to a more female workforce.

SBAE teachers have historically been white and male. While we've observed a gender shift, we have not seen a similar shift in race, even as our secondary students and FFA members become more non-white. This is particularly true in the Western region where Hispanic populations have risen dramatically in SBAE programs. Should SBAE teachers look like their students? In the case of both gender and race we must find effective ways of recruiting and retaining male teachers and teachers of color.

Sources of New School-Based Agricultural Education Teacher Hires

Program completers accounted for more than 50% of the new hires from 2017-2019. Nearly 25% of new hires were considered alternative licensure or non-licensed teachers. Should this be a concern? We spend considerable effort to produce program completers. Little is known from this study about teachers that take a nontraditional path to the profession. Do they come from SBAE programs? How successful are they in the classroom? Are retention rates of alternatively prepared SBAE teachers like traditionally trained teachers? Are professional development needs different? Unmet demand for SBAE teaches drives schools to hire nontraditional or alternatively prepared teachers. As universities continue to struggle to produce enough program completers to fill demand, the number of alternatively certified SBAE teachers will increase.

A major factor in the demand is the number of positions vacated by teachers. Five to seven percent of SBAE teachers leave the profession each year. Retirements are predictable and account for about 25% of the loss. This is the largest segment of teachers leaving and likely cannot be changed. However, when adding leaving to agribusiness and production agriculture we see another 20% loss. Could this segment be retained? What would need to change about SBAE or the expectations of teaching agriculture to do that? Termination, or non-renewal, is the 3rd leading cause of teachers leaving the profession. This seems quite high, considering that termination is usually difficult for tenured teachers and therefore this is likely to be weighted to new teachers. Such a "revolving door" of young teachers is concerning. It can be argued that new teachers are still learning their craft and are much less effective than more experienced teachers. What else can be done to support these developing professionals and retain them?

Growing Positions and Programs

Nationally, the FFA organization continues to experience consistent growth in membership. This growth has, in many cases, been facilitated by increasing class sizes within school districts or hiring additional teachers to serve the school-based agricultural education program. During the study period, new positions grew at a steady rate of 2.2% annually;

however, these gains were partially offset by lost positions. Overall, the average annual net growth was 1.8% nationally. While modest, this growth contributes to the ongoing teacher shortage. Among the regions, the Western region experienced the highest net growth (2.4%), while the Southern region had the lowest (1.5%).

Program growth during the study period varied by region, ranging between 1.6% and 2.0%, with net growth between 1.2% and 1.5%. The North Central region saw the highest net growth (1.8%), while the Western region had the lowest (0.7%). Program growth is closely tied to teacher demand, with each new program requiring at least one additional teacher. Nationally, the average number of teachers per program increased from 1.48 in 2017 to 1.54 in 2019, indicating that many new positions are driven by program expansion.

Over the past six years, new hires (excluding teachers moving between schools) accounted for approximately 10% of the total number of teachers. While this data does not account for attrition among new teachers, it suggests that a significant proportion of teachers may have less than five years of experience, underscoring the importance of supporting early-career educators.

Predicted Program Completers

Teacher preparation institutions are annually tasked with forecasting the number of program completers they expect to produce. Projections indicate that the supply of program completers over the next three years will likely remain consistent with the levels observed during this period.

Shortfall and Other Metrics

Since 1965, the Supply and Demand study has reported the shortfall—the discrepancy between the supply of and demand for teachers—using various metrics. In the 2014–2016 report, researchers introduced a shortfall score comparing demand to program completers (PCs). In this report (2017–2019), we introduce the Net Shortfall, which we believe provides a more accurate assessment of the ability of teacher preparation institutions to meet the demand for SBAE teachers. The Net Shortfall compares demand to PCs who actually enter the SBAE teaching profession. It is important to note, however, that licensed teachers who do not take teaching positions immediately may still enter the workforce at a later time.

A significant challenge in calculating consistent metrics lies in the need for valid demand data from both the current and prior years. In some cases, data were incomplete or unavailable, making it impossible to compute metrics for certain states. Nonetheless, most states provided data for at least one year, offering readers a point of comparison against nationally available statistics.

During the study period, the national retention rate for all public school teachers remained steady at 92% (National Center for Education Statistics, 2024). For SBAE teachers, the national average retention rate was slightly higher, at 93.3%. While retention rates varied widely across states, this national average indicates a relatively stable workforce within SBAE compared to the broader teaching profession.

Recommendations for Future Research and Practice

The Supply and Demand survey has long provided a robust and valuable data set for understanding trends in the field. The National Supply and Demand Study's effectiveness depends on being mindful of the time constraints and expectations of the surveyed population. As a longitudinal study, it is critical that the survey maintains consistency with past methodologies to ensure data reliability and comparability over time. Addressing the persistent shortage of SBAE teachers requires complementary actionable research that builds on these insights. The existing data highlights significant variations across states and regions, underscoring the need for a deeper investigation into these disparities. There are some key unanswered research questions organized by the following topics: Faculty Dedicated to School-Based Agricultural Education Teacher Preparation, School-Based Agricultural Education Teacher Preparation Programs, Attrition and Retention, and Licensure.

Faculty Dedicated to School-Based Agricultural Education Teacher Preparation

Identifying the factors driving fluctuations in assistant, associate, and full professor roles is essential for developing effective strategies for faculty retention and recruitment. Are these changes primarily driven by university constraints, such as budget limitations or hiring freezes, or do they reflect natural attrition among an aging faculty population?

Additionally, understanding the long-term career trajectories of clinical instructors and graduate teaching assistants in SBAE programs is critical. Do these roles serve as stepping stones to future tenure-track positions, or are they primarily temporary appointments? Investigating these dynamics will provide valuable insights into the pathways and barriers within the academic career pipeline, enabling more strategic approaches to faculty development and succession planning.

School-Based Agricultural Education Teacher Preparation Programs

To create more equitable and efficient agricultural education systems, it is essential to investigate factors such as gender and racial disparities, regional program variations, and the capacity of universities to produce qualified educators. Comparative analysis of SBAE program quality and outcomes across regions could uncover significant differences that inform best practices. Understanding the root causes of gender disparities in program completers, as well as identifying effective strategies to attract more male candidates, is critical to addressing this imbalance. Similarly, targeted research should focus on identifying strategies to recruit and retain racially diverse teachers, fostering a more inclusive workforce.

An in-depth examination of the student "pipeline" at the state level—from FFA to universities, colleges of agriculture, and ultimately program completers (PCs)—is also necessary. Such analysis could pinpoint where diversity is being lost, especially since PCs are disproportionately female and White compared to FFA populations. Understanding the major sources of PCs and whether they reflect the demographics of their teachers could offer valuable insights for improving diversity throughout the pipeline.

Variations among university agricultural education programs also warrant further study. Exploring how these programs influence outcomes, and yield could reveal why some are more

successful at producing program completers, while others attract students who do not intend to teach. Program yields have been climbing, yet the reasons behind this trend remain unclear. Potential factors include changes to program structures, candidate demographics, career interests, or job availability.

Finally, universities' capacity to produce program completers must be assessed. Recruitment of more candidates is only part of the solution, as program capacity is limited by faculty availability, class sizes, internship supervision requirements, and the accessibility of qualified internship sites. Understanding these constraints and their impact will be vital for scaling programs to meet the growing demand for agricultural educators.

Attrition and Retention

Re-entry teachers, who return to teaching after a period away, represent a valuable potential resource for addressing teacher shortages. Research is needed to track current hires to determine how many re-entry teachers are entering the workforce and to understand their motivations and challenges. Similarly, delayed entry teachers, those who do not take teaching positions immediately after completing licensure requirements, warrant further investigation. How many eventually enter the profession, why do they delay entry, and what strategies could be employed to track and recruit them more effectively?

Teacher attrition is another critical area requiring deeper analysis. Understanding who is leaving the profession—categorized by experience, gender, and race—can inform targeted interventions. While retirement is the leading reason for teacher exits and often unavoidable, other reasons for leaving may be preventable. Identifying these factors could lead to the development of programs aimed at reducing attrition. For example, nationally, new teachers experience high rates of attrition. Comparative research across states could identify effective strategies for retaining new teachers, including induction programs and new teacher workshops. If certain states demonstrate lower turnover rates, their approaches could serve as models for broader implementation.

Additionally, the role of pre-service preparation in mitigating early-career turnover requires closer examination. Are there elements of pre-service training that correlate with higher retention rates? Exploring these questions could lead to more robust teacher preparation and retention strategies, ultimately stabilizing and strengthening the SBAE teacher workforce.

Licensure

To better understand and address variations in the SBAE teacher workforce, several key areas require focused research. First, exploring the variations in licensure requirements across states is essential. How do these differences impact the recruitment and number of program completers? Furthermore, do these variations influence teacher quality and preparedness? Understanding these dynamics could inform efforts to harmonize or improve licensure policies to enhance both quantity and quality.

Teacher mobility between states is another critical factor. Research should investigate the enablers and barriers to interstate movement of program completers (PCs), particularly in states that produce few or no PCs. Are candidates choosing out-of-state universities for their education

and subsequently returning to their home states? If so, what drives these decisions, and how can this knowledge improve recruitment strategies?

Gender dynamics in teacher mobility and retention also merit further study. Are there significant differences in job location mobility based on gender, and does a lack of mobility disproportionately affect female teachers? Additionally, what are the broader implications of the gender shift in the SBAE teaching workforce on program delivery and retention?

The correlation between gender, race, and subject areas taught also requires attention. Are certain demographics more likely to teach specific subjects, and if so, what are the implications for educational equity and program effectiveness? Finally, research should examine the role of alternatively prepared teachers in filling gaps, particularly in specific subject areas. Are these pathways effectively addressing shortages, and what is their impact on program quality? Addressing these questions will provide valuable insights for building a more diverse, effective, and sustainable SBAE teacher workforce.

Recommendations for Practice

To address current challenges and opportunities, we recommend strengthening interdepartmental collaborations and resource sharing to maximize efficiency and impact across programs. Providing targeted training and professional development for clinical instructors and graduate teaching assistants is essential to enhance instructional quality.

Focused recruitment efforts should prioritize assistant and associate professors to build a strong academic foundation. Robust spring semester internship placements and enhanced local partnerships can further support students' career readiness and job placement success. Targeted initiatives should also be implemented to encourage male participation and increase the recruitment and retention of underrepresented racial groups, fostering greater diversity and inclusion. Additionally, fostering collaboration among different types of institutions to share best practices and resources will amplify collective efforts and drive sustained progress.

References

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.

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

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

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

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.

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

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

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

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

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

FAEIS, (2023). *Food and Agricultural Education Information System (*[data set]. www.faeis.cals.vt.edu/. Accessed 10 Nov. 2023.

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/

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

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.

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

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], https://nces.ed.gov/programs/coe/indicator/clr.

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

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

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

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., and 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. https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2024039.

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

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. Stakeholder groups in agricultural education were contacted to assist in adequate data collection. Those include, but are not limited to NAAE, AAAE, NASAE, and the National Teach Ag Campaign
2009-2013	No National Supply and Demand Study conducted by AAAE
2004-2009	Project leader was Adam J. Kantrovich, Michigan State University Extension
2004	Delegation of the American Association of Agricultural Education voted to move their annual meeting to no longer be held in conjunction with the Association of Career and Technical Education. 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
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

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 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 2017, 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	2017	2018	2019	2017	2018	2019	2017	2018	2019
Institutions	38	40	43	46	46	48	16	16	16
Institutions Reporting	35	33	40	38	40	40	14	15	14

Contacts are listed for respondents.

Region	State	Institution	Year	Contact
North Central				
	Connecticut	University of Connecticut	2017	Patricia Jepson
	Connecticut	University of Connecticut	2018	Patricia Jepson
	Connecticut	University of Connecticut	2019	Patricia Jepson
	Delaware	Delaware State University	2017	
	Delaware	Delaware State University	2018	Amanda Powell
	Delaware	Delaware State University	2019	Amanda Powell
	Delaware	University of Delaware	2017	Arba Henry
	Delaware	University of Delaware	2018	Arba Henry
	Delaware	University of Delaware	2019	Arba Henry
	Illinois	Illinois State University	2017	Lucas D. Maxwell
	Illinois	Illinois State University	2018	Lucas D. Maxwell
	Illinois	Illinois State University	2019	Lucas D. Maxwell
	Illinois	Southern Illinois University	2017	Seburn L. Pense
	Illinois	Southern Illinois University	2018	Seburn Pense
	Illinois	Southern Illinois University	2019	Seburn L. Pense
	Illinois	University of Illinois at Urbana-Champaign	2017	Debra Korte
	Illinois	University of Illinois at Urbana-Champaign	2018	Debra Korte
	Illinois	University of Illinois at Urbana-Champaign	2019	Debra Korte
	Illinois	Western Illinois University	2017	Andy Baker
	Illinois	Western Illinois University	2018	Andy Baker
	Illinois	Western Illinois University	2019	Andrew Baker
	Indiana	Huntington University	2019	Raymie Porter
	Indiana	Purdue University	2017	Allen Talbert
	Indiana	Purdue University	2018	Allen Talbert
	Indiana	Purdue University	2019	Allen Talbert
	Iowa	Dordt University	2017	Dick Joerger
	Iowa	Dordt University	2018	Dick Joerger
	Iowa	Dordt University	2019	Gary DeVries
	Iowa	Iowa State University	2017	Scott Smalley
	Iowa	Iowa State University	2018	Scott Smalley
	Iowa	Iowa State University	2019	Scott Smalley
	Iowa	Morningside University	2019	Thomas Paulsen
	Iowa	Upper Iowa University	2019	

Region	State	Institution	Year	Contact
	Kansas	Fort Hays State University	2017	Clyde Cranwell
	Kansas	Fort Hays State University	2018	
	Kansas	Fort Hays State University	2019	Jeremy Ryan
	Kansas	Kansas State University	2017	Brandie Disberger
	Kansas	Kansas State University	2018	Brandie Disberger
	Kansas	Kansas State University	2019	Brandie Disberger
	Maryland	University of Maryland	2017	Bill Phillips
	Maryland	University of Maryland	2018	Melissa Leiden Welsh
	Maryland	University of Maryland	2019	Melissa Leiden Welsh
	Maryland	University of Maryland Eastern Shore	2017	Karl Binns Jr.
	Maryland	University of Maryland Eastern Shore	2018	
	Maryland	University of Maryland Eastern Shore	2019	Jurgen Schwarz
	Massachusetts	Fitchburg State University	2018	
	Massachusetts	University of Massachusetts	2017	
	Massachusetts	University of Massachusetts	2018	
	Massachusetts	University of Massachusetts	2019	
	Michigan	Michigan State University	2017	Matt R. Raven
	Michigan	Michigan State University	2018	Matt R. Raven
	Michigan	Michigan State University	2019	Matt R. Raven
	Minnesota	Southwest Minnesota State University	2017	Kristin Kovar
	Minnesota	Southwest Minnesota State University	2018	Kristin Kovar
	Minnesota	Southwest Minnesota State University	2019	Kristin Kovar
	Minnesota	University of Minnesota Crookston	2017	Lyle Westrom
	Minnesota	University of Minnesota Crookston	2018	Lyle Westrom
	Minnesota	University of Minnesota Crookston	2019	Lyle Westrom
	Minnesota	University of Minnesota-Twin Cities	2017	Brad Greiman
	Minnesota	University of Minnesota-Twin Cities	2018	Brad Greiman
	Minnesota	University of Minnesota-Twin Cities	2019	Amy Smith
	Missouri	College of the Ozarks	2017	Donn Russell
	Missouri	College of the Ozarks	2018	Donn Russell
	Missouri	College of the Ozarks	2019	Donn Russell
	Missouri	Missouri State University	2017	Jim Hutter
	Missouri	Missouri State University	2018	Jim Hutter
	Missouri	Missouri State University	2019	
	Missouri	Northwest Missouri State University	2017	Jacqueline Lacy
	Missouri	Northwest Missouri State University	2018	Jacqueline Lacy
	Missouri	Northwest Missouri State University	2019	Jackie Lacy
	Missouri	Southeast Missouri State University	2017	David Mauk
	Missouri	Southeast Missouri State University	2018	David Mauk
	Missouri	Southeast Missouri State University	2019	David Mauk
	Missouri	University of Central Missouri	2019	Mike Keilholz
	Missouri	University of Missouri	2017	John Tummons
	Missouri	University of Missouri	2018	John Tummons
	Missouri	University of Missouri	2019	John Tummons
	Nebraska	University of Nebraska	2017	Matt Kreifels
	Nebraska	University of Nebraska	2018	Matt Kreifels
	Nebraska	University of Nebraska	2019	Matt Kreifels
	New Hampshire	University of New Hampshire	2017	Liz Arcieri
	New Hampshire	University of New Hampshire	2018	Liz Arcieri
	New Hampshire	University of New Hampshire	2019	Tom Schram
	New Jersey	Rutgers University	2017	Rebecca Jordan
	New Jersey	Rutgers University	2018	
	New Jersey	Rutgers University	2019	Lisa Kruger
	New York	Cornell University	2017	
	New York	Cornell University	2018	Jeffrey Perry

Region	State	Institution	Year	Contact
	New York	Cornell University	2019	Jeffrey Perry
	New York	Ithaca College	2018	
	New York	SUNY Oswego	2017	Jan Woodworth
	New York	SUNY Oswego	2018	Jan Woodworth
	New York	SUNY Oswego	2019	Jan Woodworth
	North Dakota	North Dakota State University	2017	Adam Marx
	North Dakota	North Dakota State University	2018	Adam Marx
	North Dakota	North Dakota State University	2019	Adam Marx
	Ohio	Central State University	2019	Jon Henry
	Ohio	The Ohio State University	2017	Susie Whittington
	Ohio	The Ohio State University	2018	Caryn Filson
	Ohio	The Ohio State University	2019	Caryn Filson
	Ohio	Wilmington College	2017	Monte Anderson
	Ohio	Wilmington College	2018	Monte Anderson
	Ohio	Wilmington College	2019	Monte Anderson
	Pennsylvania	Delaware Valley University	2017	David D. Timony
	Pennsylvania	Delaware Valley University	2018	David D Timony
	Pennsylvania	Delaware Valley University	2019	David D. Timony
	Pennsylvania	Pennsylvania State University	2017	Daniel Foster
	Pennsylvania	Pennsylvania State University	2018	Daniel Foster
	Pennsylvania	Pennsylvania State University	2019	Daniel Foster
	South Dakota	South Dakota State University	2017	Troy White
	South Dakota	South Dakota State University	2018	Troy White
	South Dakota	South Dakota State University	2019	Troy White
	West Virginia	West Virginia University	2017	Harry Boone
	West Virginia	West Virginia University	2018	Harry Boone
	West Virginia	West Virginia University	2019	Jessica Blythe
	Wisconsin	University of Wisconsin - River Falls	2017	James C. Graham
	Wisconsin	University of Wisconsin - River Falls	2018	James C. Graham
	Wisconsin	University of Wisconsin - River Falls	2019	James Graham
	Wisconsin	University of Wisconsin-Platteville	2017	Mark Zidon
	Wisconsin	University of Wisconsin-Platteville	2018	
	Wisconsin	University of Wisconsin-Platteville	2019	Mark Zidon
Southern				
	Alabama	Auburn University	2017	James Lindner
	Alabama	Auburn University	2018	James Lindner
	Alabama	Auburn University	2019	Christopher Clemons
	Arkansas	Arkansas State University	2017	Kevin Humphrey
	Arkansas	Arkansas State University	2018	Kevin Humphrey
	Arkansas	Arkansas State University	2019	Kevin Humphrey
	Arkansas	Arkansas Tech University	2017	Justin Killingsworth
	Arkansas	Arkansas Tech University	2018	Justin Killingsworth
	Arkansas	Arkansas Tech University	2019	Justin Killingsworth
	Arkansas	Southern Arkansas University	2017	Copie Moore
	Arkansas	Southern Arkansas University	2018	Copie Moore
	Arkansas	Southern Arkansas University	2019	Copie Moore
	Arkansas	University of Arkansas	2017	Catherine Shoulders
	Arkansas	University of Arkansas	2018	
	Arkansas	University of Arkansas	2019	Kate Shoulders
	Arkansas	University of Arkansas Pine Bluff	2017	
	Arkansas	University of Arkansas Pine Bluff	2018	
	Arkansas	University of Arkansas Pine Bluff	2019	
	Florida	University of Florida	2017	Andrew Thoron
	Florida	University of Florida	2018	Andrew Thoron
	Florida	University of Florida	2019	Andrew Thoron

Region	State	Institution	Year	Contact
	Georgia	Abraham Baldwin Agricultural College	2019	Frank Flanders
	Georgia	Fort Valley State University	2017	Curtis Borne
	Georgia	Fort Valley State University	2018	Curtis Borne
	Georgia	Fort Valley State University	2019	
	Georgia	University of Georgia	2017	Eric Rubenstein
	Georgia	University of Georgia	2018	Eric Rubenstein
	Georgia	University of Georgia	2019	Eric Rubenstein
	Kentucky	Eastern Kentucky University	2017	Mike McDermott
	Kentucky	Eastern Kentucky University	2018	Mike McDermott
	Kentucky	Eastern Kentucky University	2019	Mike McDermott
	Kentucky	Morehead State University	2017	Joyce Stubbs
	Kentucky	Morehead State University	2018	Joyce Stubbs
	Kentucky	Morehead State University	2019	Joyce Stubbs
	Kentucky	Murray State University	2017	Kimberly A. Bellah
	Kentucky	Murray State University	2018	Kimberly A Bellah
	Kentucky	Murray State University	2019	Kimberly A. Bellah
	Kentucky	University of Kentucky	2017	Rebekah Epps
	Kentucky	University of Kentucky	2018	Rebekah Epps
	Kentucky	University of Kentucky	2019	Rebekah Epps
	Kentucky	Western Kentucky University	2017	Thomas Kingery
	Kentucky	Western Kentucky University	2018	Thomas Kingery
	Kentucky	Western Kentucky University	2019	
	Louisiana	Louisiana State University	2017	Kristin Stair
	Louisiana	Louisiana State University	2018	Kristin Stair
	Louisiana	Louisiana State University	2019	Kristin Stair
	Louisiana	Louisiana Tech	2017	Track Kavanaugh
	Louisiana	Louisiana Tech	2018	Henry Smith
	Louisiana	Louisiana Tech	2019	Track Kavanaugh
	Louisiana	McNeese State University	2017	Chip LeMieux
	Louisiana	McNeese State University	2018	Chip LeMieux
	Louisiana	McNeese State University	2019	Chip LeMieux
	Mississippi	Alcorn State University	2017	Avis Joseph
	Mississippi	Alcorn State University	2018	Avis Joseph
	Mississippi	Alcorn State University	2019	Avis Joseph
	Mississippi	Mississippi State University	2017	Kirk Swortzel
	Mississippi	Mississippi State University	2018	Kirk Swortzel
	Mississippi	Mississippi State University	2019	Kirk Swortzel
	North Carolina	Appalachian State University	2019	Jerianne Taylor
	North Carolina	Brevard College	2019	Gina Raicovich
	North Carolina	North Carolina A&T State University	2017	
	North Carolina	North Carolina A&T State University	2018	Chastity English
	North Carolina	North Carolina A&T State University	2019	Chastity English
	North Carolina	North Carolina State University	2017	Jim Flowers
	North Carolina	North Carolina State University	2018	Travis Park
	North Carolina	North Carolina State University	2019	Travis Park
	North Carolina	University of Mount Olive	2017	Stephen Edwards
	North Carolina	University of Mount Olive	2018	Sandy Maddox
	North Carolina	University of Mount Olive	2019	Stephen Edwards
	Oklahoma	Northwestern Oklahoma State University	2017	Mindi Clark
	Oklahoma	Northwestern Oklahoma State University	2018	Mindi Clark
	Oklahoma	Northwestern Oklahoma State University	2019	Mindi Clark
	Oklahoma	Oklahoma Panhandle State University	2017	Nels M. Peterson
	Oklahoma	Oklahoma Panhandle State University	2018	Nels M. Peterson
	Oklahoma	Oklahoma Panhandle State University	2019	
	Oklahoma	Oklahoma State University	2017	Jon Ramsey

Region	State	Institution	Year	Contact
	Oklahoma	Oklahoma State University	2018	Jon Ramsey
	Oklahoma	Oklahoma State University	2019	Jon Ramsey
	Puerto Rico	University of PR at Mayaguez	2017	Edly Santiago-Andino
	Puerto Rico	University of PR at Mayaguez	2018	David Padilla-Velez
	Puerto Rico	University of PR at Mayaguez	2019	David Padilla-Velez
	South Carolina	Clemson University	2017	Catherine DiBenedetto
	South Carolina	Clemson University	2018	Catherine DiBenedetto
	South Carolina	Clemson University	2019	Catherine DiBenedetto
	Tennessee	Middle Tennessee State University	2017	
	Tennessee	Middle Tennessee State University	2018	Alanna Vaught
	Tennessee	Middle Tennessee State University	2019	Chaney Mosely
	Tennessee	Tennessee State University	2017	John C. Ricketts
	Tennessee	Tennessee State University	2018	
	Tennessee	Tennessee State University	2019	John Ricketts
	Tennessee	Tennessee Tech University	2017	OP McCubbins
	Tennessee	Tennessee Tech University	2018	
	Tennessee	Tennessee Tech University	2019	Billye Foster
	Tennessee	University of Tennessee	2017	
	Tennessee	University of Tennessee	2018	
	Tennessee	University of Tennessee-Martin	2017	Will Bird
	Tennessee	University of Tennessee-Martin	2018	Will Bird
	Tennessee	University of Tennessee-Martin	2019	Will Bird
	Texas	Angelo State University	2017	Micheal Salisbury
	Texas	Angelo State University	2018	J. Will Dickison
	Texas	Angelo State University	2019	James Will Dickison
	Texas	Sam Houston State University	2017	Dwayne Pavelock
	Texas	Sam Houston State University	2018	Dwayne Pavelock
	Texas	Sam Houston State University	2019	Dwayne Pavelock
	Texas	Stephen F. Austin State University	2017	
	Texas	Stephen F. Austin State University	2018	Candis Carraway
	Texas	Stephen F. Austin State University	2019	Candis Carraway
	Texas	Sul Ross State University	2017	Christopher Estepp
	Texas	Sul Ross State University	2018	Chris Estepp
	Texas	Sul Ross State University	2019	Jeanne Pinkerton
	Texas	Tarleton State University	2017	David Frazier
	Texas	Tarleton State University	2018	David Frazier
	Texas	Tarleton State University	2019	David Frazier
	Texas	Texas A&M University	2017	Tim Murphy
	Texas	Texas A&M University	2018	Tim Murphy
	Texas	Texas A&M University	2019	Tim Murphy
	Texas	Texas A&M University-Commerce	2017	Bob Williams
	Texas	Texas A&M University-Commerce	2018	Robert Williams
	Texas	Texas A&M University-Commerce	2019	
	Texas	Texas A&M University-Kingsville	2017	Boot Chumbley
	Texas	Texas A&M University-Kingsville	2018	Randall Williams
	Texas	Texas A&M University-Kingsville	2019	Steven Chumbley
	Texas	Texas State University	2017	
	Texas	Texas State University	2018	Doug Morrish
	Texas	Texas State University	2019	Ryan Anderson
	Texas	Texas Tech University	2017	Rudy Ritz
	Texas	Texas Tech University	2018	John Rayfield
	Texas	Texas Tech University	2019	John Rayfield
	Texas	West Texas A&M University	2017	
	Texas	West Texas A&M University	2018	Kevin Williams
	Texas	West Texas A&M University	2019	

Region	State	Institution	Year	Contact
	Virginia	Ferrum College	2017	
	Virginia	Ferrum College	2018	
	Virginia	Ferrum College	2019	
	Virginia	Virginia State University	2017	Chris Catanzaro
	Virginia	Virginia State University	2018	Chris Catanzaro
	Virginia	Virginia State University	2019	
	Virginia	Virginia Tech	2017	Donna Westfall-Rudd
	Virginia	Virginia Tech	2018	Donna Westfall-Rudd
	Virginia	Virginia Tech	2019	Donna Westfall-Rudd
Western				
	Arizona	University of Arizona	2017	Quintin Molina
	Arizona	University of Arizona	2018	Quintin Molina
	Arizona	University of Arizona	2019	Quintin Molina
	California	California Polytechnic State University, San Luis Obispo	2017	Erin Gorter
	California	California Polytechnic State University, San Luis Obispo	2018	Ben G Swan
	California	California Polytechnic State University, San Luis Obispo	2019	Ben Swan
	California	California State Polytechnic University, Pomona	2017	
	California	California State Polytechnic University, Pomona	2018	
	California	California State Polytechnic University, Pomona	2019	Kimberly Miller
	California	California State University, Chico	2017	Mollie Aschenbrener
	California	California State University, Chico	2018	Mollie Aschenbrener
	California	California State University, Chico	2019	Mollie Aschenbrener
	California	California State University, Fresno	2017	Rosco Vaughn
	California	California State University, Fresno	2018	Rosco Vaughn
	California	California State University, Fresno	2019	Rosco Vaughn
	California	University of California, Davis	2017	Margaret Martindale
	California	University of California, Davis	2018	Margaret Martindale
	California	University of California, Davis	2019	Margaret Martindale
	Colorado	Colorado State University	2017	Kellie Enns
	Colorado	Colorado State University	2018	Kellie Enns
	Colorado	Colorado State University	2019	Kellie Enns
	Idaho	University of Idaho	2017	Kattlyn Wolf
	Idaho	University of Idaho	2018	Kattlyn Wolf
	Idaho	University of Idaho	2019	Kattlyn Wolf
	Montana	Montana State University	2017	Carl Igo
	Montana	Montana State University	2018	Carl Igo
	Montana	Montana State University	2019	Carl Igo
	Nevada	University of Nevada - Reno	2017	
	Nevada	University of Nevada - Reno	2018	Kristina Carey
	Nevada	University of Nevada - Reno	2019	Kristina Carey
	New Mexico	Eastern New Mexico University	2017	Marshall Swafford
	New Mexico	Eastern New Mexico University	2018	Marshall Swafford
	New Mexico	Eastern New Mexico University	2019	Marshall Swafford
	New Mexico	New Mexico State University	2017	Tre Easterly
	New Mexico	New Mexico State University	2018	Tre Easterly
	New Mexico	New Mexico State University	2019	
	Oregon	Oregon State University	2017	Josh Stewart
	Oregon	Oregon State University	2018	Josh Stewart
	Oregon	Oregon State University	2019	Josh Stewart

Region	State	Institution	Year	Contact
	Utah	Utah State University	2017	Rebecca Lawver
	Utah	Utah State University	2018	Rebecca Lawver
	Utah	Utah State University	2019	Rebecca Lawver
	Washington	Washington State University	2017	J.D. Baser
	Washington	Washington State University	2018	J.D. Baser
	Washington	Washington State University	2019	J.D. Baser
	Wyoming	University of Wyoming	2017	Chris Haynes
	Wyoming	University of Wyoming	2018	Lindsey Renea Freeman
	Wyoming	University of Wyoming	2019	

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 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	2017	2018	2019	2017	2018	2019	2017	2018	2019
States	24	24	24	15	15	15	14	14	14
Respondents	22	23	21	13	15	13	12	13	13

Contacts are listed for respondents.

AAAE Region	State	Year	Contact
North Central			
	Connecticut	2017	Harold Mackin
	Connecticut	2018	Harold Mackin
	Connecticut	2019	Harold Mackin
	Delaware	2017	Bart Gill
	Delaware	2018	Bart Gill
	Delaware	2019	Bart Gill
	Illinois	2017	Harley Hepner
	Illinois	2018	Susie Scott
	Illinois	2019	Mindy Bunselmeyer
	Indiana	2017	Allen Talbert
	Indiana	2018	Allen Talbert
	Indiana	2019	Allen Talbert
	Iowa	2017	Scott Johnson
	Iowa	2018	Scott Johnson
	Iowa	2019	Scott Johnson
	Kansas	2017	Kurt Dillon
	Kansas	2018	Kurt Dillon
	Kansas	2019	Kurt Dillon
	Maine	2017	Doug Robertson
	Maine	2018	Doug Robertson
	Maine	2019	Doug Robertson
	Maryland	2017	David Miller
	Maryland	2018	David Miller
	Maryland	2019	David Miller
	Massachusetts	2017	
	Massachusetts	2018	Kim LaFleur
	Massachusetts	2019	Kimberly LaFleur
	Michigan	2017	Mark Forbush

AAAE Region	State	Year	Contact
	Michigan	2018	Mark Forbush
	Michigan	2019	Mark Forbush
	Minnesota	2017	Joel Larsen
	Minnesota	2018	Joel Larsen
	Minnesota	2019	Zane Sheehan
	Missouri	2017	Leon Busdieker
	Missouri	2018	Marie Davis
	Missouri	2019	Marie Davis
	Nebraska	2017	Matthew Kreifels
	Nebraska	2018	Krystl Knabe
	Nebraska	2019	Krystl Knabe
	New Hampshire	2017	Maria VanderWoude
	New Hampshire	2018	Maria VanderWoude
	New Hampshire	2019	Maria VanderWoude
	New Jersey	2017	Nancy Trivette
	New Jersey	2018	Nancy Trivette
	New Jersey	2019	Erin Noble
	New York	2017	Shari Lighthall
	New York	2018	Shari Lighthall
	New York	2019	Shari Lighthall
	North Dakota	2017	Aaron Anderson
	North Dakota	2018	Aaron Anderson
	North Dakota	2019	Aaron Anderson
	Ohio	2017	Matt Winkle
	Ohio	2018	Matt Winkle
	Ohio	2019	Matt Winkle
	Pennsylvania	2017	John Ewing
	Pennsylvania	2018	John Ewing
	Pennsylvania	2019	John Ewing
	Rhode Island	2017	Stacie Pepperd
	Rhode Island	2018	Paul McConnel
	Rhode Island	2019	
	South Dakota	2017	Michelle Nelson
	South Dakota	2018	Michelle Nelson
	South Dakota	2019	Michelle Nelson
	Vermont	2017	
	Vermont	2018	
	Vermont	2019	
	West Virginia	2017	Jason Hughes
	West Virginia	2018	Jason Hughes
	West Virginia	2019	
	Wisconsin	2017	Jeff Hicken
	Wisconsin	2018	Jeff Hicken
	Wisconsin	2019	Jeff Hicken
Southern			

AAAE Region	State	Year	Contact
	Alabama	2017	Jacob Davis
	Alabama	2018	Jacob Davis
	Alabama	2019	Andy Chamness
	Arkansas	2017	Chris Bacchus
	Arkansas	2018	Chris Bacchus
	Arkansas	2019	Chris Bacchus
	Florida	2017	Eric Owens
	Florida	2018	Andrew Thoron
	Florida	2019	Kaitlin Vickers
	Georgia	2017	Chip Bridges
	Georgia	2018	Ben Lastly
	Georgia	2019	
	Kentucky	2017	Brandon Davis
	Kentucky	2018	Brandon Davis
	Kentucky	2019	Brandon Davis
	Louisiana	2017	Eric Smith
	Louisiana	2018	Eric Smith
	Louisiana	2019	Eric Smith
	Mississippi	2017	Lee James
	Mississippi	2018	Gayle Fortenberry
	Mississippi	2019	Jill Wagner
	North Carolina	2017	Gerald Barlow
	North Carolina	2018	Gerald Barlowe
	North Carolina	2019	Josh Bledsoe
	Oklahoma	2017	Jack Staats
	Oklahoma	2018	Jack Staats
	Oklahoma	2019	Jack Staats
	Puerto Rico	2017	
	Puerto Rico	2018	Yarmila Ayuso
	Puerto Rico	2019	Yarmila Ayuso
	South Carolina	2017	Billy Keels
	South Carolina	2018	Billy Keels
	South Carolina	2019	Billy Keels
	Tennessee	2017	Steve Gass
	Tennessee	2018	Steven Gass
	Tennessee	2019	Steve Gass
	Texas	2017	Austin Large
	Texas	2018	Barney McClure
	Texas	2019	Amanda Brantley
	Virgin Islands	2017	
	Virgin Islands	2018	Rev. Dr. Eddie Williams
	Virgin Islands	2019	
	Virginia	2017	Carly Woolfolk
	Virginia	2018	LaVeta Nutter
	Virginia	2019	LaVeta Nutter

AAAE Region	State	Year	Contact
Western			
	Alaska	2017	Kevin Fochs
	Alaska	2018	Kevin Fochs
	Alaska	2019	Kevin Fochs
	Arizona	2017	Bruce Watkins
	Arizona	2018	Bethany Matos
	Arizona	2019	Bruce Watkins
	California	2017	Lloyd McCabe
	California	2018	Lloyd McCabe
	California	2019	Chuck Parker
	Colorado	2017	Michael Womochil
	Colorado	2018	Michael Womochil
	Colorado	2019	Michael Womochil
	Guam	2017	
	Guam	2018	
	Guam	2019	
	Hawaii	2017	
	Hawaii	2018	Troy Sueoka
	Hawaii	2019	Troy Sueoka
	Idaho	2017	Jerry Severe
	Idaho	2018	Lucas Barnett
	Idaho	2019	Lucas Barnett
	Montana	2017	Shannon Boswell
	Montana	2018	Shannon Boswell
	Montana	2019	Shannon Boswell
	Nevada	2017	Anne Willard
	Nevada	2018	Anne Willard
	Nevada	2019	Anne Willard
	New Mexico	2017	Les Purcella
	New Mexico	2018	Jerrod Smith
	New Mexico	2019	Jerrod Smith
	Oregon	2017	Reynold Gardner
	Oregon	2018	Reynold Gardner
	Oregon	2019	Reynold Gardner
	Utah	2017	William Deimler
	Utah	2018	William Deimler
	Utah	2019	William Deimler
	Washington	2017	Denny Wallace
	Washington	2018	Dennis Wallace
	Washington	2019	Denny Wallace
	Wyoming	2017	Stacy Broda
	Wyoming	2018	Stacy Broda
	Wyoming	2019	Stacy Broda

Appendix E -- Comprehensive Opened Ended Unique Challenges of Agricultural Teacher Educators Responses from 2017

Challenges
AgEd teacher preparation is officially listed in the School of Education, but substantial commitment from the College of Agriculture, Health and Natural Resources is required to keep the program active.
Our program is challenged by increased teacher certification requirements. It is a challenge for students to get requirements completed in four years. Students also question GPA and qualifying test requirements for Agriculture Education. We are seeing outside candidates use alternative certification to get teaching position and not have to go through the rigor of the Teacher Education Program.
At present time, no undergraduate degree is offered. If accepted into the Graduate program, students receive an Education Scholarship, which reduces their per credit hour cost by approximately 60%
Continual changing of state licensure and Secondary Education requirements
cost of exams during preservice teaching program; beginning teacher salary in the profession isn't high when compared nationally
Course hour requirements to attain a degree in agricultural education and to meet certification requirements in our state. We embedded hours based upon our School of Education redesign, otherwise we would be at a 140 hour program instead of 127-128. MoPTA is also a challenge for students, as it is a massive undertaking that occurs during student teaching.
Distances traveled for student teaching supervision; AgEd faculty recommend but do not assign student teaching placements.
During the fall semester prior to student teaching in the spring, interns teach micro-lesson in high school classrooms. All Agricultural Education graduates are certified in CASE AFNR
Education faculty teach a large portion of the professional education/pedagogical courses.
Extreme shortage of minority teachers in agriculture in Virginia.
Full time teaching internship semester (12 hrs.) often begins prior to the university's semester.
low numbers of Ag. Ed. teachers in K-12 schools
Many programs in South Carolina have active agricultural mechanization in the curricula. To ensure students are properly taught skills needed to teach AGMECH our undergraduate plan of study includes 9 credits of AGMECH and Agricultural calculation courses. To emphasize

the importance of teaching STEM concepts in agriculture, students also take a course specific to Teaching Agriscience. Students who have an interest in cooperative extension as a career option are highly encouraged to complete the student teaching experience and gain certification, although they may not intend to teach in a SBAE program.
moving to year long internship in next 3 years
Nearly 75% of our students transfer as juniors from community colleges.
Not enough candidates for available positions
On-going devaluation of teaching in general in the United States but at the Federal and State levels. Also the cost of an university degree especially like in our case when it takes five years to get certified.
oppressive certification requirements
Our Ag Education faculty have retired at the same time and severe state budget cuts have slowed the re-hiring process.
Our institution is continuously competing with more relaxed non-traditional licensing requirements.
Our service area for placement is large with about a 2 hour radius of the university campus.
Searching for an Assistant Professor of Agricultural Education (1.0 FTE) to begin August 2018.
State certification requirements for teachers. The number of credits needed to get an undergraduate degree in agricultural education is high.
Supervising a growing number of student teachers across the state when our institution is located in the central part of the state.
Three assessments must be taken and passed for licensure: TAP Test, AG ED Content Test, and edTPA.
time for instruction money to train
UPR-Mayaguez Campus is the only one university in Puerto Rico that prepare AgEd teacher in the whole island. Moreover, AgEd Department at UPR-Mayaguez Campus prepare only Hispanics students with tropical agricultural knowledge.
We are a 5th year credential program. There is no undergraduate degree in Agricultural Education. We have an Agricultural Science degree that has a teaching career option with it,

but any student with a bachelor's degree can pursue a teaching credential in agriculture as a graduate student.
We are a regional institute with one Ag Ed teacher educator. It's challenging to provide the Ag Ed coursework needed, as I have to teach several "service courses" that other majors take (Career Planning in Ag, History of Ag, Ag Leadership) to justify my position. The service expectation of my position is also VERY time consuming.
We are an 1890 Land Grant institution. We have diverse population of Ag Education Majors (Black, White and international students) We strive to increase the number of minority teacher in the state.
We are experiencing a significant increase in the number of agricultural education teaching majors at UNL, which we believe is due to the Teach Ag efforts in Nebraska. This has created a strain on our faculty to provide the same amount of attention and level of instruction to these pre-service teachers.
We became accredited to offer an Ag Ed degree program starting in August of 2016.
We do not have a degree in Agricultural Education. The state of Texas does not allow it. At my institution, students major in a specific field, then minor in Secondary Education. Options for majors are Agricultural Business, Agricultural Engineering Technology, Animal Science, Interdisciplinary Agriculture, and Plant & Soil Science
We don't have a state approved undergraduate program. All of our students in the teaching and learning option of our major fulfill the requirements of licensure, however, if they leave after the completion of their BS (rather than complete an MSEd), they can only attain provisional licensure.
We have a year around student teaching option.
We have two student teaching experiences...phase I and phase II. Both teach an entire high school semester.
We lost two faculty members at the end of the last school year and are currently in the process of hiring a new tenure-track Agricultural Education faculty member. The current Director of Teacher Education is on a one-year, non-tenure track appointment. The program has maintained rigor and is moving forward, although currently understaffed. The FTE situation will be resolved in the near future.
We offer the degrees on part-time or full-time student status; also we offer all teacher education courses online so students can be working or living at home while they complete, to save money.
We operate under a Residency program for teacher licensure. In a students final year, they spend the first 7 weeks of the fall semester on campus- they complete a special education

course, and a seminar course in Ag Ed. The remainder of the semester is spent at the students assigned secondary program to complete Residency 1. Residency 2 is the entire spring semester of the students final year.
With 5 state institutions with Ag Ed and us being a small HBCU in an urban area it is very difficult to turn out many ag teachers.

Appendix F – Three Year Average Supply and Demand Data by AAAE Region (2017-2019)

These highlights are based on averages of the three years of data. Note that each year represents a different number of respondents. In the case of some data not all respondents reported complete data.

	North Central	Southern	Western	Grand Total
Total Teachers	4238	6415	2194	12847
Total Programs	3187	3958	1257	8401
Female Teachers	2075	2675	1113	5863
Male Teachers	2131	3718	998	6846
Non-binary Teachers	0	2	0	2
Full-time Teachers	4133	6131	2039	12303
Part-time Teachers	105	284	155	544
New Programs	69	67	21	157
New Positions	82	100	61	242
Teachers Leaving Total	264	355	96	714
Teachers Leaving Retirement	69	75	26	170
Alternative Licensure	29	77	7	113
Non Licensed	98	161	46	304
Programs Lost	11	18	11	40
Positions Lost	17	25	29	71
Vacant Full-time	12	24	26	62
Vacant Part-time	2	0	4	6
Institutions	32	37	14	82
Program Completers	269	408	136	812
Average of PCs Teaching	206	292	118	616
Average of Positions to Fill	163	318	74	555

Appendix G -- Three Year Average Supply and Demand Data by NAAE Region (2017-2019)

These highlights are based on averages of the three years of data. Note that each year represents a different number of respondents. In the case of some data not all respondents reported complete data.

	I	II	III	IV	V	VI	Grand Total
Total Teachers	1987	3954	1252	2145	2332	1177	12847
Total Programs	1081	2218	1067	1535	1755	745	8401
Female Teachers	1015	1520	642	977	1068	641	5863
Male Teachers	888	2431	610	1138	1257	522	6846
Non-binary Teachers	0	2	0	0	0	0	2
Full-time Teachers	1832	3690	1190	2121	2320	1151	12303
Part-time Teachers	155	264	62	24	12	26	544
New Programs	18	31	23	28	41	17	157
New Positions	59	53	22	50	46	13	242
Teachers Leaving Total	79	228	83	146	129	49	714
Teachers Leaving Retirement	21	47	22	32	29	18	170
Alternate Licensure	5	25	8	16	54	5	113
Non Licensed	41	80	21	53	96	13	304
Programs Lost	10	5	4	4	12	4	40
Positions Lost	28	8	6	11	15	4	71
Vacant Full-time	25	7	5	4	15	6	62
Vacant Part-time	3	0	1	0	0	0	6
Institutions	12	22	8	18	13	9	82
Program Completers	120	273	106	138	130	45	812
Average of PCs Teaching	107	195	82	105	96	32	616
Average of Positions to Fill	68	181	66	104	115	20	555

Appendix H -- Three Year Average Supply and Demand Data by National FFA Region (2017-2019)

These highlights are based on averages of the three years of data. Note that each year represents a different number of respondents. In the case of some data not all respondents reported complete data.

	Central	East	Southern	Western	Grand Total
Total Teachers	2756	2791	2889	4411	12847
Total Programs	2245	1921	2165	2070	8401
Female Teachers	1164	1414	1239	2046	5863
Male Teachers	1592	1333	1641	2280	6846
Non-binary Teachers	0	0	0	2	2
Full-time Teachers	2686	2741	2782	4094	12303
Part-time Teachers	70	50	107	317	544
New Programs	42	42	47	26	157
New Positions	42	53	56	90	242
Teachers Leaving Total	199	160	160	195	714
Teachers Leaving Retirement	48	41	40	41	170
Alternate Licensure	18	15	63	17	113
Non Licensed	54	64	105	81	304
Programs Lost	6	7	13	14	40
Positions Lost	9	13	16	33	71
Vacant Full-time	8	10	19	26	62
Vacant Part-time	2	1	0	3	6
Institutions	20	23	19	20	82
Program Completers	214	146	169	284	812
Average of PCs Teaching	166	106	121	223	616
Average of Positions to Fill	111	99	129	215	555

Appendix I -- 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 J – Historical Response Rates

Supply Survey

Year	2014	2015	2016	2017	2018	2019
Institutions	90	95	101	89	90	95
Supply Frame	103	99	101	101	101	107
Response Rate	87%	96%	100%	88%	89%	89%

Demand Survey

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

Appendix K – Degrees Granted by Institution (2017)

A summary can be found in Table 8.

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
NC	Connecticut	University of Connecticut		X	X							
NC	Delaware	University of Delaware			X							
NC	Illinois	Illinois State University		X		X						
NC	Illinois	Southern Illinois University		X		X						X
NC	Illinois	University of Illinois at Urbana-Champaign		X		X						
NC	Illinois	Western Illinois University		X								
NC	Indiana	Purdue University		X		X		X				X
NC	Iowa	Dordt University	X	X				X				
NC	Iowa	Iowa State University		X		X						
NC	Kansas	Fort Hays State University		X								
NC	Kansas	Kansas State University		X		X						
NC	Maryland	University of Maryland		X				X				
NC	Maryland	University of Maryland Eastern Shore		X			X					
NC	Michigan	Michigan State University		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
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	Southeast Missouri State University		X								

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
NC	Missouri	University of Missouri		X		X						X
NC	Nebraska	University of Nebraska		X						X		
NC	New Hampshire	University of New Hampshire		X				X				
NC	New Jersey	Rutgers University						X				
NC	New York	Ithaca College			X							
NC	New York	SUNY Oswego		X		X						
NC	North Dakota	North Dakota State University		X		X						
NC	Ohio	The Ohio State University		X		X		X				X
NC	Ohio	Wilmington College		X								
NC	Pennsylvania	Delaware Valley University		X								
NC	Pennsylvania	Pennsylvania State University		X		X		X				X
NC	South Dakota	South Dakota State University		X		X						
NC	West Virginia	West Virginia University		X		X						X
NC	Wisconsin	University of Wisconsin - River Falls		X		X						
NC	Wisconsin	University of Wisconsin-Platteville		X								
Southern	Alabama	Auburn University		X				X	X			X
Southern	Arkansas	Arkansas State University		X		X	X	X				
Southern	Arkansas	Arkansas Tech University		X								
Southern	Arkansas	Southern Arkansas University		X								
Southern	Arkansas	University of Arkansas		X		X						
Southern	Florida	University of Florida		X		X						X
Southern	Georgia	Fort Valley State University		X						X		
Southern	Georgia	University of Georgia		X						X		
Southern	Kentucky	Eastern Kentucky University		X		X		X				
Southern	Kentucky	Morehead State University		X						X		
Southern	Kentucky	Murray State University		X		X						

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
Southern	Kentucky	University of Kentucky		X		X						
Southern	Kentucky	western Kentucky university		X	X							
Southern	Louisiana	Louisiana State University		X		X						X
Southern	Louisiana	Louisiana Tech		X				X				
Southern	Louisiana	McNeese State University		X								
Southern	Mississippi	Alcorn State University		X								
Southern	Mississippi	Mississippi State University		X		X						X
Southern	North Carolina	North Carolina State University		X		X				X	X	
Southern	North Carolina	University of Mount Olive		X								
Southern	Oklahoma	Northwestern Oklahoma State University		X								
Southern	Oklahoma	Oklahoma Panhandle State University		X								
Southern	Oklahoma	Oklahoma State University		X		X						X
Southern	Puerto Rico	University of PR at Mayaguez		X		X						
Southern	South Carolina	Clemson University		X			X					
Southern	Tennessee	Tennessee State University		X			X					
Southern	Tennessee	Tennessee Tech University	X		X				X			
Southern	Tennessee	The University of Tennessee		X		X						
Southern	Tennessee	University of Tennessee-Martin		X								
Southern	Texas	Angelo State University		X								
Southern	Texas	Sam Houston State University		X								
Southern	Texas	Sul Ross State University		X		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-Commerce		X								

AAAE Region	State	Institution	BA	BS	MA	MS	MAg	MEd	EdS	Other Masters	EdD	PhD
Southern	Texas	Texas A&M University-Kingsville		X			X					
Southern	Virginia	Virginia State University		X								
Southern	Virginia	Virginia Tech		X		X		X				
Western	Arizona	University of Arizona		X		X						
Western	California	California Polytechnic State University; San Luis Obispo				X						
Western	California	California State University; Chico		X		X						
Western	California	California State University; Fresno		X		X						
Western	California	University of California; Davis		X								X
Western	Colorado	Colorado State University		X			X					
Western	Idaho	University of Idaho		X		X						
Western	Montana	Montana State University		X		X						
Western	New Mexico	Eastern New Mexico University		X								
Western	New Mexico	New Mexico State University		X	X							
Western	Oregon	Oregon State University				X						
Western	Utah	Utah State University		X		X		X				X
Western	Washington	Washington State University	X		X							
Western	Wyoming	University of Wyoming		X								

Appendix L – 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 an historical perspective to 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
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

* Federal Board for Vocational Education, 1921

Appendix M– Instruments Used in this Study

2017 National Supply Instrument

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

SUPPLY: FALL 2017

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 2016-2017 program completers *(those who fulfilled licensure requirements between August 2016 and August 2017).*

How many total **program completers** (those who have fulfilled licensure requirements) in Agricultural Education were produced by your program in the 2016-2017 academic year?

As of September 15, 2017, please indicate **confirmed and/or intended employment plans** for 2016-2017 program completers.

Note: The total must equal the number of licensed, program completed 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.

The following two questions request information about the licensure and/or degrees received by program completers. The total of the two fields (female and male) must equal ${q://QID3/ChoiceTextEntryValue}.

Indicate the **licensure/degree** received by **FEMALE** program completers in 2016-2017.

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** received by **MALE** program completers in 2016-2017.

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

The following two questions request information about the race of program completers. Please note that the number of program completers by gender reported here (according to race) much match the number reported above (according to licensure/degree).

Please report the race of **FEMALE** program completers in 2016-2017. Based upon your previous response, this total must equal ${q://QID26/TotalSum}.

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

Please report the race of **MALE** program completers in 2016-2017. Based upon your previous response, this total must equal ${q://QID38/TotalSum}.

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...

2017-2018	
2018-2019	
2019-2020	

Section 2: 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 was requested was 2014.**

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

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

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
- ○ Not offered

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

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)

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.

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.).

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

- ○ Quarters
- ○ Semesters

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

- ☐ Fall semester
- ☐ Spring semester

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

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

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

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

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?

When **2017-2018 annual supply data** is collected one year from now, will you be the appropriate contact? If NO, please indicate who should be contacted for this valuable information.

- ○ Yes
- ○ No (Please provide NAME, TITLE & EMAIL)

Respectfully submitted by:

Name	
Title	
Institution	
State	
Email	
Phone	

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2017 National Demand Instrument

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

DEMAND: FALL 2017

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, 2017 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 2016-2017 and 2017-2018 academic years, were any school-based agricultural education positions lost and/or programs closed in your state?

- O No
- O Yes

Please report the total **number of programs closed** in your state between the 2016-2017 and 2017-2018 academic years.

Please report the **number of positions lost** in your state between the 2016-2017 and 2017-2018 academic years.

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

Note: Total must match the number reported above.

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

Between the 2016-2017 and 2017-2018 school years, how many agricultural education teachers **left school-based Agricultural Education** and will not be returning to teach 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 above.

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, 2017 as the baseline for responses.

Please indicate the number of active **PROGRAMS** and **TEACHERS** in your state for the 2017-2018 academic year.

School-based Agricultural Education PROGRAMS	0
School-based Agricultural Education TEACHERS	0
Total	0

Please indicate the number of **FULL TIME** and **PART TIME TEACHERS** in your state for the 2017-2018 academic year.

Note: Total number combined should equal the number of teachers reported in the preceding question.

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 question(s).

Female	0
Male	0
Unknown	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 question(s).

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 SBAE hires** in your state.

Considering the total number of agricultural education **teachers who accepted new positions** in your state this year, identify their **professional background or preparation** immediately prior to this position.

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, 2017, 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 2017-2018 academic year?

New/additional positions created in school-based Agricultural Education programs (program expansion from 1 teacher to 2 teachers, etc)	0
NEW programs created in school-based Agricultural Education	0
Total	0

To further identify potential program growth and expansion in your state, please 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: 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 **2018--2019 annual demand data** is collected one year from now, will you be the appropriate contact? If NO, please indicate who should be contacted for this valuable information. Please include NAME, TITLE and EMAIL.

- O Yes
- O No

Respectfully submitted by:

State	
Name	
Title	
Email	
Phone	

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

Average total starting salary for beginning teachers in school-based Agricultural Education:

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):

Powered by Qualtrics

2018 National Supply Instrument

2018 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 2017-2018 program completers (those who fulfilled licensure requirements between August 2017 and August 2018).

Q3 How many total program completers (those who have fulfilled licensure requirements) in Agricultural Education were produced by your program in the 2017-2018 academic year?

_____

Q4 As of September 15, 2018, please indicate confirmed and/or intended employment plans for 2017-2018 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 The following two questions request information about the licensure and/or degrees received by program completers. The total of the two fields (female and male) must equal ${Q3/ChoiceTextEntryValue}.

Q7 Indicate the **licensure/**degree received by **FEMALE** program completers in 2017-2018.
Licensure only, non-degree/no degree awarded : _____
Undergraduate/Baccalaureate : _____
Post-baccalureate (5th year program, no additional degree) : _____
Graduate : _____
Total : _____

Q8 Indicate the **licensure**/degree received by **MALE** program completers in 2017-2018.
Licensure only, non-degree/no degree awarded : _____
Undergraduate/Baccalaureate : _____
Post-baccalureate (5th year program, no additional degree) : _____
Graduate : _____
Total : _____

Q9 The following two questions request information about the race of program completers. Please note that the number of program completers by gender reported here (according to race) much match the number reported above (according to licensure/degree).

Q10 Please report the race of **FEMALE** program completers in 2017-2018. Based upon your previous response, this total must equal ${Q7/TotalSum}.
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 : _____

Q11 Please report the race of **MALE** program completers in 2017-2018. Based upon your previous response, this total must equal ${Q8/TotalSum}.
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 : _____

Q12 Looking to the future, how many license-eligible, program completers in Agricultural Education do you anticipate will be produced by your institution in…

- 2018-2019 _____
- 2019-2020 _____
- 2020-2021 _____

Q26 **Section 2: Logistical Information**

Q27 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?

_____

_____

_____

Q28 When **2018-2019 annual supply data** is collected one year from now, will you be the appropriate contact? If NO, please indicate who should be contacted for this valuable information.

- Yes
- No (Please provide NAME, TITLE & EMAIL)

_____

Q29 Respectfully submitted by:

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

2018 National Demand Instrument

2018 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, 2018 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 2017-2018 and 2018-2019 academic years, were any school-based agricultural education positions lost and/or programs closed in your state?

- ○ No
- ○ Yes

Page 1 of 7

Display This Question:
If Q3 = Yes

Q4 Please report the total **number of programs closed** in your state between the 2017-2018 and 2018-2019 academic years.

_____

Display This Question:
If Q3 = Yes

Q5 Please report the **number of positions lost** in your state between the 2017-2018 and 2018-2019 academic years.

_____

Display This Question:
If Q3 = Yes

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 2017-2018 and 2018-2019 school years, how many agricultural education teachers **left school-based Agricultural Education** and will not be returning to teach 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, 2018 as the baseline for responses.

Q11 Please indicate the number of active **PROGRAMS** and **TEACHERS** in your state for the 2018-2019 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 2018-2019 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 : _____
Unknown : _____
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 SBAE hires** in your state. Considering the total number of agricultural education **teachers who accepted new positions** in your state this year, identify their **professional background or preparation** immediately prior to this position. *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 : _____

Display This Question:
If Q15 [Non-licensed individual] >= 1

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, 2018, 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 2018-2019 academic year?
New/additional positions created in school-based Agricultural Education programs (program expansion from 1 teacher to 2 teachers, etc.) : _____
New **programs** created in school-based Agricultural Education : _____
Total : _____

Q19 To further identify potential program growth and expansion in your state, please 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: Logistical Information

Q21 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

_____

_____

_____

_____

_____

Q22 When **2019-2020 annual demand data** is collected one year from now, will you be the appropriate contact? If NO, please indicate who should be contacted for this valuable information. Please include NAME, TITLE and EMAIL.

- ○ Yes
- ○ No _____

Q23 Respectfully submitted by:

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

Q24 **Optional Response Items** If the following information is available for your state, please provide.

Q25 Average total starting salary for beginning teachers in school-based Agricultural Education:

_____

Q26 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)

_____

Q27 Percentage of school-based Agricultural Education teachers who receive a stipend for FFA advisement (beyond extended contract):

_____

2019 National Supply Instrument

UNIVERSITY OF MINNESOTA
Driven to Discover®

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

SUPPLY: FALL 2019

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 2018-2019 program completers *(those who fulfilled licensure requirements between August 2018 and August 2019).*

How many total **program completers** (those who have fulfilled licensure requirements) in Agricultural Education were produced by your program in the 2018-2019 academic year?

[ ]

As of September 15, 2019, please indicate **confirmed and/or intended employment plans** for 2018-2019 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 2018-2019 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 2018-2019 **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 2018-2019 **MALE** program completers.

Licensure only, non-degree/no degree awarded	0
Undergraduate/Baccalaureate	0

Indicate the **race** of 2018-2019 **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 2018-2019 **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…

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

Indicate the **licensure/degree** of 2018-2019 **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 2018-2019.

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 2018-2019 **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

2019 National Demand Instrument

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

DEMAND: FALL 2019

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, 2019 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 2018-2019 and 2019-2020 academic years, were any school-based agricultural education positions lost and/or programs closed in your state?

- O No
- O Yes

Please report the total **number of programs closed** in your state between the 2018-2019 and 2019-2020 academic years.

Please report the **number of positions lost** in your state between the 2018-2019 and 2019-2020 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 2018-2019 and 2019-2020 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, 2019 as the baseline for responses.

Please indicate the number of active **PROGRAMS** and **TEACHERS** in your state for the 2019-2020 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 2019-2020 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, 2019, 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 2019-2020 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 further identify potential program growth and expansion in your state, please 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

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):

Section 3: 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 **2019-2020 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