

Agricultural Teacher Preparation Program Capacity in the AAAE

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Introduction

The U.S. continues to face a shortage of qualified school-based agricultural education (SBAE) teachers. Teacher preparation institutions are a key supplier of SBAE teachers. The ability of teacher preparation institutions to attract students, have the capacity to train them, and place them in teaching positions (yield) are important factors in the supply of new teachers. The capacity to train teachers is a function of faculty resources and the requirements of licensure programs. Teacher training programs are faculty intensive since they contain activity-based classes and supervised internships. Trends in faculty capacity to provide SBAE teachers provide insight into the future supply of SBAE teachers. Since 1965 the American Association for Agricultural Education (AAAE) has been collecting data on SBAE teacher supply and demand. Between 1995 and 2009 nationally agricultural education full-time equivalent faculty (FTEF) decreased 21% and program completers (PC) increased 4% (Camp et al., 2002; Kantrovich, 2007, 2010). Sources of new hires include PCs and alternative licensed teachers. Darling-Hammond and Baratz-Snowden (2007) stress the importance of teacher preparation for successful instruction. When the supply of PCs is insufficient to meet demand, more positions are filled with alternatively licensed teachers.

Conceptual Framework

The conceptual framework for the National Supply and Demand (NSD) study (Lawver et al., 2018) identifies factors contributing to SBAE teacher supply and demand. PCs are one component of the supply side of the model. This research explores the changes in the capacity of teacher education programs to fulfill the demand. This analysis seeks to answer the following questions: 1) What is the trend for SBAE hires filled by agricultural teacher preparation program completers?; 2) What is the trend in full-time equivalent faculty (FTEF) that support teacher preparation programs?; 3) What is the trend in ranked faculty (assistant, associate, and full professors)?; and 4) Are their differences in land-grant and non-land-grant institutions (NLG)?

Methods

The NSD study utilizes a census survey of agricultural education state staff and faculty contacts at agricultural education teacher preparation programs. The NSD study annually collects information on the sources of new hires from state staff and every three years on teacher preparation faculty from teacher preparation institutions. Response rates for state staff providing demand data average 83% and response rates for teacher preparation programs providing supply data average 88% (Foster et al., 2024). This study examined the data for 2014, 2017, 2020, and 2023. These are the years when faculty data were collected. Data analysis was performed using Microsoft Excel.

Results

As demand increases, the trend in SBAE teacher hiring has been a steady decline in positions filled by PCs (Table 1). Over the period, the number of PCs has increased by 12%, and while the yield (the percentage of PCs taking SBAE teaching jobs) has increased by 9%, PC production has not kept pace with the demand, which has increased by over 67%. This has led to

more positions being filled with alternatively licensed teachers. FTEF has increased by only 1% over the period (Table 2). This trend is not true in the Western Region, where FTEF has declined 24%. There has been a notable shift away from ranked faculty as the percentage of ranked faculty declined 12%. The effect of the minimal increases in FTEF faculty and the increase of PC production is to raise the PC/Faculty ratios. Overall, PC/FTEF has gone up 8% and PC/Ranked Faculty has increased by 81% over the period. Nationally, in 2023 46% of the responding preparation institutions are land grant institutions producing 52% of the PC. During the period 2014-2023, ranked faculty decreased 15% at land-grant institutions and 8% at NLG institutions.

Table 1
Demand and New Hires

	2014	2017	2020	2023
States Reporting Hiring Sources	41	45	47	45
Demand	492	455	703	823
NC Percent PC of New Hires	56%	48%	68%	49%
Southern Percent PC of New Hires	75%	52%	59%	49%
Western Percent PC of New Hires	71%	56%	69%	39%
Total Percent PC of New Hires	66%	52%	65%	47%

Table 2
Faculty

	2014	2017	2020	2023
Institutions Reporting	90	86	88	92
PC	746	695	891	838
Yield	69%	75%	74%	78%
FTEF	200	190	222	230
% Ranked Faculty	71%	69%	56%	59%
PC/FTEF	4.6	4.0	5.2	5.0
PC/Ranked Faculty	5.3	5.3	7.1	6.2

Conclusions/Implications

The percentage of PCs hired to fill available positions is falling, suggesting that the ability of teacher preparation programs to meet demand is diminishing as demand is increasing. All types of institutions are moving towards lower ratios of ranked faculty to total FTEF. Land grant institutions are shifting to having less ranked faculty at a faster rate than non-land grant institutions. A reduction in ranked faculty is likely to reduce continuity and increase faculty turnover in teacher preparation programs. The reduction of ranked faculty and the increase in student faculty ratios are consistent with other studies. Research suggests that this trend is driven by economics (Jaquette & Curs, 2022; Zhang et al., 2015). However, little research is available that explores the impact of these trends on the quality of PCs in any discipline. Although PC production is increasing and yields are increasing, the supply of PCs is not keeping up with the demand. PC faculty ratios are climbing, and at some point, capacity will simply reach maximum as classes fill and the supervision load becomes too large.

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Follow up for 2020-22:

Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding teacher shortages: An analysis of teacher supply and demand in the United States. *education policy analysis archives*.

Greenberg, J.A., McKee, A., & Walsh, K. (2013). Teacher Prep Review: A Review of the Nation's Teacher Preparation Programs. *Ewing Marion Kauffman Foundation Research Paper Series*.

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

“Colleges and universities have increasingly employed faculty whose salaries and benefits are relatively inexpensive; the slowly deteriorating financial situations at most colleges and universities have led to an increasing reliance on a contingent academic workforce.”

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

“Declines in state appropriations have decreased the ability of public research universities to hire faculty, particularly tenure line faculty.”