Examining Gender Trends in Agricultural Education Teacher Supply from 2015 to 2024

Chaney Mosley
Middle Tennessee State University
chaney.mosley@mtsu.edu

Matthew Sanchez
Middle Tennessee State University
mrs2bw@mtmail.mtsu.edu

Dorique Insisienmay
Middle Tennessee State University
dai2q@mtmail.mtsu.edu

Carly Altman
Middle Tennessee State University
ca5i@mtmail.mtsu.edu

Examining Gender Trends in Agricultural Education Teacher Supply from 2015 to 2024

Introduction / Need for Research

The National Agricultural Education Supply and Demand Study (Foster et al., 2025). has served as the primary source of data on the agricultural education workforce pipeline since 1965. Over the last 25 years, gender representation within this pipeline has become a growing topic. Edwards and Briers (2001) noted an increase of females teaching agriculture, reporting 36% of beginning teachers were female. Kelsey (2007) explained females had traditionally been underrepresented as teachers in secondary agricultural education. While teacher diversity strengthens the profession, supports recruitment of a wider range of students, and helps ensure that the education workforce reflects the populations it serves (Nevarez et al., 2019), the field continues to face a persistent shortage of qualified graduates to fill teaching positions nationwide (Tummins et al., 2024). This shortage may be linked to declining enrollment in agricultural degree programs (Baker et al., 2013). Research has documented the expanding role of women in agricultural education (Enns & Martin, 2015) and the corresponding decline in male participation (Tummins et al., 2024). Studies suggest that men's career decisions are influenced by financial considerations, work-life balance, and advancement opportunities—factors that may discourage them from pursuing teaching as a long-term career (Meader & Larwin, 2021; See et al., 2022). Understanding how these gender dynamics manifest in the agricultural education graduate supply is essential to anticipating the profession's future workforce needs. Therefore, the purpose of this study was to describe national, regional, and state-level gender trends in the supply of agricultural education graduates from 2014–2024 using the AAAE Supply and Demand dataset. The research questions were: **(RQ1)** at the national level, how has the distribution of male and female agricultural education graduates changed from 2015–2024; **(RQ2)** across AAAE, NAAE, and FFA regions, what trends can be observed in the gender distribution of agricultural education graduates from 2015–2024; **(RQ3)** to what extent do states vary in the proportion of female agricultural education graduates during the 2015–2024 period; and **(RQ4)** are there statistically significant differences in the proportion of female agricultural education graduates among AAAE, NAAE, and FFA regions from 2015–2024?

Theoretical Framework

This study is guided by Social Role Theory (Eagly, 1987) and the Pipeline Framework for teacher supply and demand (Ingersoll, 2001). Social Role Theory posits that societal expectations about gender roles shape how individuals perceive and pursue certain occupations. Historically, teaching has been culturally associated with communal and nurturing traits, which may contribute to greater female participation and declining male representation in agricultural education. The Pipeline Framework conceptualizes the teacher workforce as a system of preparation, entry, and retention, emphasizing how demographic shifts and workforce dynamics influence the availability of qualified educators. Together, these frameworks provide a lens for understanding how sociocultural factors and structural conditions interact to influence gender representation within the agricultural education teacher pipeline.

Methodology

This study used data from the *National Agricultural Education Supply and Demand Project* (Foster et al., 2025). The analysis draws on the most recent ten years of data available through this project. States reporting less than 7 years of data between 2015 and 2024 were excluded from analysis. For states retained in the analysis ($N = 39$), missing values were imputed

using each state's mean to preserve within-state characteristics while minimizing bias from sporadic reporting (Little & Rubin, 2019). Variables analyzed included total and gender-specific counts of agricultural education graduates, along with regional identifiers from the AAAE, NAAE, and FFA organizations. For research questions 1 through 3, descriptive statistics summarized national, regional, and state-level trends using absolute counts and proportions of female graduates. For research question 4, one-way analyses of variance (ANOVA) tested for statistically significant differences in the proportion of female graduates among AAAE, NAAE, and FFA regions, with the national average reported for context. All analyses were conducted at the aggregate (state-year) level.

Results / Findings

RQ1. Total agricultural education graduates were 707 in 2015 with 471 female graduates (67%) and 236 male graduates. In 2024, totals were 753 with 576 female graduates (77%) and 177 male graduates. Across 2015–2024, programs awarded 7,931 total degrees.

RQ2. For AAAE regions, the decade-average proportion of female graduates was highest in Western (76%) and lowest in Southern (71%). In all AAAE regions female representation increased over time. For NAAE regions, the decade-average was highest in Region VI (81%) and lowest in Region II (70%). In all NAAE regions, female representation increased over time. For FFA regions, the decade-average was highest in East (76%) and lowest in Southern (71%). In all FFA regions, female representation increased over time.

RQ3. Across 39 states meeting inclusion criteria, the ten-year average proportion of female graduates ranged from 49% to 90%, with a median of 74%. Ninety-seven percent of states averaged at least 60% female graduates.

RQ4. Differences among AAAE regions were not statistically significant, $F(2, 27) = 2.57$, $p = .095$. Differences among NAAE regions were statistically significant, $F(5, 54) = 4.63$, $p = .001$. Differences among FFA regions were not statistically significant, $F(3, 36) = 1.78$, $p = .167$. For context, the national mean proportion female across all observations was 73%. AAAE regional means were Western 76% %, North Central 75% %, and Southern 71% %. NAAE regional means were VI 81% %, III 77%, I 76%, IV 72%, V 72%, and II 71%. FFA regional means were East 76%, Western 74%, Central 72%, and Southern 71%.

Conclusions / Implications / Recommendations

Findings confirm that women comprise a growing majority of agricultural education graduates, extending patterns reported by Enns and Martin (2015) and aligning with Social Role Theory (Eagly, 1987), which connects occupational choices to gendered expectations. Viewed through the Pipeline Framework (Ingersoll, 2001), these results suggest that gender disparities are emerging during teacher preparation, shaping who ultimately enters the profession. As noted by Meader and Larwin (2021) and See et al. (2022), men's career choices are often influenced by salary and advancement opportunities, which may limit their participation in teaching. This narrowing of the male pipeline reduces the pool of potential teachers at a time when the profession faces persistent shortages and growing FFA membership. These findings also reinforce concerns raised by Baker et al. (2013) and Tummins et al. (2024) about the long-term sustainability of the agricultural workforce pipeline. Future research could examine how gender patterns among graduates correspond with changes in the number of male and female teachers employed over time, identifying where female representation in the workforce has expanded most rapidly and how those changes differ across states and regions.

References

Baker, L. M., Settle, Q., Chiarelli, C., & Irani, T. (2013). Recruiting strategically: Increasing enrollment in academic programs of agriculture. *Journal of Agricultural Education, 54*(3), 54–66. https://doi.org/10.5032/jae.2013.03054

Edwards, M. C. & Briers, G. E. (2001). Selected variables related to expected longevity in teaching of entry-phase agriculture teachers. *Journal of Career and Technical Education, 18*(1). https://doi.org/10.21061/jcte.v18i1.595

Enns, K. & Martin, M. (2015). Gendering agricultural education: A study of historical pictures of women in The Agricultural Education Magazine. *Journal of Agricultural Education, 56*(3), 69–89. https://doi.org/10.5032/jae.2015.03069

Foster, D. D., Smith, A. R., Rogers, A., Lawver, R. G., & Spiess, M. (2025). National Agricultural Education Supply and Demand Project [data set]. American Association for Agricultural Education. Retrieved October 6, 2025 from https://nsd.aaaeonline.org.

Kelsey, K. D. (2007). Overcoming gender bias with self-efficacy: A case study of women agricultural education teachers and preservice students. *Journal of Agricultural Education, 48*(1), 52–63. https://doi.org/10.5032/jae.2007.01052

Little, R. J. A., & Rubin, D. B. (2019). *Statistical analysis with missing data* (3rd ed.). Wiley.

Meader, K. & Larwin, K. (2021). Exploring the perceptions of male teachers about the shortage of male elementary school teachers: A Q methodology. *Journal of Education, 202*(4), 416–435. https://doi.org/10.1177/0022057421996243

Nevarez, C., Jouganatos, S. M., & Wood, J. L. (2019). Benefits of teacher diversity: Leading for transformative change. *Journal of School Administration Research and Development, 4*(1), 24–34. https://doi.org/10.32674/jsard.v4i1.1940

See, B. H., Munthe, E., Ross, S. A., Hitt, L., & Soufi, N. E. (2022). Who becomes a teacher and why? *Review of Education, 10*(3), 1–40. https://doi.org/10.1002/rev3.3377

Tummons, J., Mott, R., & Bagnell, R. (2024). "The lost boys": A case study of male agricultural education teacher certification students who changed their career trajectories. *Journal of Agricultural Education, 65*(3), 276–291. https://doi.org/10.5032/jae.2024.03276