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An Investigation of the Routes to Certification and Turnover Intentions of Wisconsin Agriculture Teachers

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Abstract

The *purpose of this study was to examine the routes to certification and turnover intentions of agriculture teachers to identify differences between alternatively and traditionally certified teachers. The population consisted of a census of early career agriculture teachers in Wisconsin with fewer than three years of teaching (N = 67) with a response rate of 52% (n = 35). The majority of respondents were traditionally certified (71%) through a bachelor's degree program, and 29% were alternatively certified through three different routes. Respondents had moderately low turnover intentions to leave the agriculture classroom as a teacher with no statistical difference (U = 130.50, p = .843) between traditionally and alternatively certified teachers. Additionally, there was no correlation between turnover intentions and traditional and alternative certification routes. While this study is not generalizable to other populations, it does provide the first insight into agricultural education research on how teachers are being alternatively certified. The results of this study prompt the need for further research on alternative certification in agricultural education, focusing on the types of programs and preparation, as well as the impact of certification route on turnover.*

***Keywords*:** alternative certification; teacher certification; routes to certification; teacher turnover; turnover intentions

Introduction and Literature Review

The recruitment and retention of agriculture teachers is one of the most important issues currently facing agricultural education as evidenced by the National Supply and Demand Study (Smith, Lawver, & Foster, 2018), efforts by the National Teach Ag Campaign (National Association of Agricultural Educators, 2018), and an emphasis in recruiting qualified individuals within the National Research Agenda (Roberts, Harder, & Brashears, 2016). Unfortunately, this is not a new challenge for the profession. A shortage of agricultural educators is documented as early as 1965 in the first national supply and demand study in agricultural education (Kantrovich, 2010). Concerns regarding a shortage of teachers are also occurring outside of agricultural education. According to the Learning Policy Institute (Sutcher, Darling-Hammond, & Carver-Thomas, 2016), from 2009 to 2014 there was a 35% decrease in the number of teachers entering the teaching profession nationwide through all subjects and grades.

One approach to resolve the teacher shortage is diversifying the paths into the teaching profession. Policymakers and school districts embrace alternative routes to certification as an

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answer to the teacher shortage (Ingersoll & Smith, 2003). Alternative routes to certification encompass any type of certification other than a university teacher preparation program (National Research Council, 2010). Often alternative routes to certification are used synonymously with the term alternative certification (Cochran-Smith et al., 2016). However, alternative routes to certification range from programs which reflect traditional teacher preparation programs to emergency certification (Walsh & Jacobs, 2007).

Research on alternative certification provides a variety of results in the broad educational realm. Many studies focus on specific alternative programs, states, or content areas which provide limited generalizability, such as work by Darling-Hammond, Chung, and Frelow (2002) which centers on teachers in New York City. Common variables studied about alternative certification include teacher preparedness, student achievement, and teacher attrition.

Two studies provide a national perspective on alternatively certified teachers. Redding and Smith (2016) used national schools and staffing survey data (SASS) to examine the impact of certification on teacher turnover. The authors found "…a dramatic increase in the proportion of early career teachers to enter the teaching profession through alternative pathways. In 1999–2000, 13% of early career teachers were certified through [alternative certification programs] compared to 24% in the 2011–2012 school year," (Redding & Smith, 2016, p. 1099). Teachers certified through alternative pathways were more likely to leave teaching than traditionally certified teachers. However, the higher rates of turnover were a recent development, as there were no differences in turnover rates between alternatively and traditionally certified teachers in the 1999-2000 school year.

The second study from the Institute of Education Sciences (Constantine et al., 2009) focused on alternative and traditionally certified elementary teachers regarding the effects on student achievements and the features of teacher certification programs. The framework that grounded the research links variables including teacher characteristics, professional preparation, classroom practices, and student performance. The findings based on a national population of 2,600 students and teachers in 63 different schools indicated certification did not have a direct impact on student achievement.

While these studies provide insight into turnover and student achievements, they also bring to light two important ideas in the conversation of certification. First, individuals who pursue alternative routes to certification are more likely to be older than traditionally certified teachers, teach in-demand subjects, and not possess a degree in education (Constantine et al., 2009; Redding & Smith, 2016). Second, alternative programs are not consistent across states or subject areas. Redding and Smith (2016) discuss the many differences in programs, while the work by Constantine et al. (2009) expounded on these inconsistencies highlighting the diversity in the amount of formal training, including number of hours required, of alternative and traditional programs.

Program differences are also evident in career and technical education. Zirkle, Martin, and McCaslin (2007) studied state certification and licensure requirements for secondary CTE teachers. They found a variety of requirements for certification, which is consistent with additional literature (Constantine et al., 2009; National Research Council, 2010; Redding & Smith, 2016). Zirkle et al. (2007) found the majority of CTE alternative certification programs were similar to other content area alternative certification programs. However, different than other areas, CTE alternative programs required occupational experience and not all programs required a bachelor's degree (Zirkle et al., 2007).

Within agricultural education, teacher preparation programs have been predominantly focused on traditional certification (Flowers & Martin, 2010). However, alternative certification became prevalent in the 1960s with a shortage of teachers in agricultural education (Bowling & Ball, 2018). In the past two decades, alternative certification research in agricultural education focused on individual states but provides valuable insight into this population of teachers. The findings indicate agriculture teachers who enter the profession through alternative routes have practical agriculture knowledge, limited pedagogical awareness (Rocca & Washburn, 2006; Young & Edwards, 2006), and differed in levels of self-efficacy (Roberts & Dyer, 2004; Robinson & Edwards, 2012) and instructional competencies (Croom, 2009; Robinson & Edwards, 2011) compared to traditionally certified agriculture teachers. While alternatively prepared agriculture teachers are often older (Robinson & Edwards, 2012) and have more occupational experience (Rocca & Washburn, 2006), Robinson and Edwards (2011) found alternatively certified agriculture teachers in Oklahoma were more likely to leave teaching.

Teacher turnover is another common theme in discussions regarding the teacher shortage. A key variable to the supply and demand of teachers is ensuring the profession retains quality teachers. Ingersoll (2001) noted teacher turnover is a major factor in the demand of teachers. Darling-Hammond and Sykes (2003, p.15) espoused, "The early exodus of teachers from the profession has been a longstanding problem" and highlighted approximately 30% of new teachers quit after five years. Indicators of teacher attrition include low pay, classroom management, a high student to teacher ratio, lack of administrative support, excessive workload, and teacher self-efficacy (Ingersoll & Smith, 2003; Sorensen, McKim, & Velez, 2016).

Recent evidence suggests that the route to certification impacts teacher attrition. In a study of two alternative certification programs, Teach for America (TFA) and New York City Teaching Fellows, Boyd et al. (2012) found the teachers from these programs left the profession at alarming rates, with 84% of TFA teachers leaving the profession after five years. Additionally, Redding and Smith (2016) found that in recent years, alternatively certified teachers' predicted turnover rates based on Schools and Staffing Survey (SASS) data were 10 percentage points higher than their traditionally certified counterparts.

With the consistent shortage of agriculture teachers, agricultural education researchers have also focused on the attrition of teachers. Lemons, Brashears, Burris, Meyers, and Price (2015) explored the factors leading to agriculture teachers leaving the classroom. In this qualitative study, former secondary agriculture teachers were found to have left the profession as "… the result of a particular set of circumstances at 'the right time'" (Lemons et al., 2015, p. 27). These agriculture teachers who left the classroom had positive experiences. However, the life of an agriculture teacher proved burdensome and their expectations of themselves played a role in their leaving (Lemons et al., 2015). Sorensen et al. (2016) examined turnover intentions as part of a nationwide study of agriculture teachers. Their research found agriculture teachers have moderately low intentions to leave the profession before retirement. When asked, agriculture teachers indicated a more desirable job opportunity, an opportunity to move up in their career, family reasons, lack of compensation for the amount of work done, and excessive workload as the top reasons for leaving the profession.

Beyond the research completed by Robinson and Edwards (2011), no research currently exists in agricultural education regarding the turnover intentions of alternatively certified agriculture teachers. In 2017, alternatively licensed teachers accounted for approximately 20% of new hires in school-based agricultural education (Smith et al., 2018). Limited information exists regarding agriculture teachers who enter the classroom through an alternative route, especially their background and likelihood of remaining in the profession. The purpose of this study was to examine

the routes to certification and turnover intentions of Wisconsin agriculture teachers with fewer than three years of teaching agriculture to identify differences between alternatively and traditionally certified teachers.

Conceptual Framework

This study was grounded in two previous works on certification and turnover intentions; a national study examining alternatively certified teachers titled, "An Evaluation of Teachers Trained Through Different Routes to Certification" (Constantine et al., 2009), as well as a national study related to work-family conflict and turnover intentions of agriculture teachers (Sorensen et al., 2016). The conceptual framework (see Figure 1) is adapted from Constantine et al. (2009) which focused on the connections between teacher's personal and professional background, teacher preparation, impacts on classroom practices, and student performance. For this study, we utilized the concepts of teacher background and preparation, renaming it "route to teacher certification" and included the turnover intentions construct from Sorensen et al. (2016). This new framework concentrates on how the teacher candidate profile and route to certification impact teachers' likelihood to leave the profession.

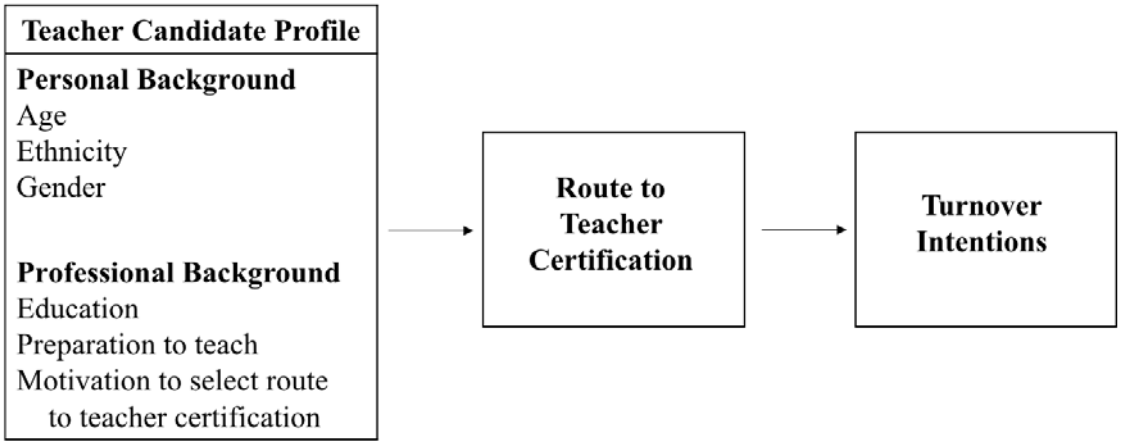

Figure 1. Conceptual framework of the relationship between teacher's personal and professional background, route to teacher certification, and turnover intentions. Adapted from "An Evaluation of Teachers Trained Through Different Routes to Certification: Final Report," by J. Constantine, D. Player, T. Silva, K. Hallgren, M. Grider, J. Deke, and E. Warner, 2009, *National Center for Education Evaluation and Regional Assistance*, p. 3.

While previous research does not provide an explicit connection among the teacher candidate profile which includes the personal and professional backgrounds of teachers, the route to teacher certifications, and turnover intentions, literature does hint at the connections. Redding and Smith (2016) linked certification type, defined as traditional or alternative, with actual turnover and referenced personal characteristics. Regarding the affiliation between the teacher candidate profile and the route to teacher certification, Constantine et al. (2009) posited a connection in their conceptual framework between the teachers' background and the type of teacher preparation program they completed. Additionally, alternatively certified teachers tended to be male, older than traditionally certified teachers, part of a minority group, and have previously worked outside of teaching before entering the classroom (Redding & Smith, 2016; Rocca & Washburn, 2006).

With respect to the types of certification, Darling-Hammond et al. (2002) found among 3000 teachers in New York City, traditionally certified teachers felt more prepared than their

alternatively certified counterparts. While there was not a direct link between preparedness and turnover, Klassen and Chiu (2011) identified self-efficacy, job stress, and teaching context as being indicative of teaching commitment and intention to leave the profession. As mentioned earlier, connections between certification type and turnover are present in the literature. Redding and Smith (2016) found alternatively certified teachers had higher attrition rates than traditionally certified teachers. Similarly, Robinson and Edwards (2012) noted less than 20% of alternatively certified agriculture teachers in their sample in Oklahoma were still teaching. In regards to the turnover intentions construct, it is important to note, turnover intentions are a predictor of actual turnover (Kopelman, Rovenpor, & Milsap, 1992). Based on the literature, the conceptual framework serves to identify the linkage between three aspects, the teacher candidate profile, the route to teacher certification, and turnover intentions.

Purpose and Research Questions

The purpose of this study was to examine the routes to certification and turnover intentions of Wisconsin agriculture teachers with fewer than three years of teaching agriculture. The following research questions led this study:

1. What are the demographic characteristics of Wisconsin agriculture teachers with fewer than three years of experience teaching agriculture?
2. What are the routes to certification and teacher preparation of Wisconsin agriculture teachers with fewer than three years of experience teaching agriculture?
3. How do turnover intentions differ by routes to certification for Wisconsin agriculture teachers with fewer than three years of experience teaching agriculture?

Methodology

This study design was descriptive and correlational. The population of teachers for the study was Wisconsin agriculture teachers in their first three years of teaching ($N = 67$) in the 2016-2017 school year. This sample of teachers was chosen due to the impact of certification on early career teachers (Redding & Smith, 2016) and the influx of alternative routes to certification within this period in Wisconsin according to state leaders. The frame for the study was collected through the state's agriculture teachers' association and confirmed by state agricultural education leaders. Due to the small, well-defined population, a census was attempted as recommended by Ary, Jacobs, and Sorensen (2010).

Instrumentation

The survey included descriptive questions from an instrument utilized by Constantine et al. (2009) and previously validated questions regarding turnover intentions (Sorensen et al., 2016), and was comprised of three parts: routes to certification, turnover intentions, and demographic information. The first section focused on the routes to certification of respondents including educational background, how they attained their teaching certification, and reasons why they chose their route to certification. Respondents indicated their highest level of education as a bachelor's degree, a master's degree, or a professional and/or doctoral degree. To identify the route of certification, respondents identified whether they attained their teaching license as part of a traditional undergraduate preparation program, a master's degree/licensure program, an alternative teacher preparation program, or an experience-based license pathway. Respondents who indicated they earned their license through an alternative teacher preparation program were asked a follow-up question to identify the name of the alternative teacher preparation program they completed. All

respondents were asked a dichotomous question if they added an agriculture license to an existing license. If respondents answered yes, they were asked to list the prior licenses through an open-ended response question. To identify reasons why participants chose to pursue the route for certification, a list of ten statements taken from Constantine et al. (2009) was utilized, along with an open-response option.

The second section consisted of an eight-item construct of turnover intentions of the participants. To identify participants' intent to exit the teaching profession before retirement, respondents rated eight statements on a six-point scale with higher scores indicating increased intention to leave the profession. Four of the eight statements were focused on the teacher's intent to stay in the profession with the other four statements measuring the intent to leave the profession.

The third section of the instrument collected demographic information focused on personal and professional traits to depict the participants of the study. Participants were asked to provide personal characteristics including age, sex, and ethnicity, with professional aspects such as the number of years they have taught agriculture, the type of community in which their school is located, and their full-time teaching assignment.

There are several types of validity for an instrument, each of which is important according to Leedy and Ormond (2016). To address face and content validity, three teacher educators at [University], a faculty member from the College of Education, and two Wisconsin agricultural education teacher leadership assessed the survey instrument. The turnover intentions construct was previously tested for reliability with a Cronbach's alpha of .88 by Sorensen et al. (2016). Using SPSS 24, the turnover intentions construct was analyzed for post-hoc reliability and had an estimated Cronbach's alpha of .95. Other questions in the instrument were descriptive in nature and did not provide concern for reliability, so no additional analysis was completed.

Data Collection and Analysis

Data collection occurred in March and April 2017 using the Tailored Design Method (Dillman, Smyth, & Christian, 2014). Contact information was collected through the Wisconsin agriculture teachers' association and confirmed by state leaders in agricultural education. Participants were invited to participate through an initial email introducing them to the study. Three days after the initial contact, an email was sent containing a link to the Qualtrics survey. A follow-up email was sent two weeks later to non-respondents with a final reminder email occurring four weeks after the first initial contact. At the end of data collection, the response rate was 52% (n = 35).

To control for nonresponse error, late respondents were defined as the later 50% of the respondents as recommended by Lindner, Murphy, and Briers (2001), due to a lack of additional contact information and inability to categorize respondents by waves of contact due to the small number of respondents for the later stimuli. The Mann-Whitney U test was performed to compare early (n = 16) and late (n = 17) respondents for four variables of interest. There were no statistical differences for any of the variables of interest ($\rho > .05$) and non-response error was deemed to not be significant in this study. The sample was considered to be representative of the study target population.

Data were analyzed using descriptive statistics and non-parametric tests. Research objectives one (what are the demographic characteristics of Wisconsin agriculture teachers with fewer than three years of experience teaching agriculture?) and two (what are the routes to certification and teacher preparation of Wisconsin agriculture teachers with fewer than three years

of experience teaching agriculture?) were analyzed using descriptive statistics including frequencies, means, and percentages. For research objective three (how do turnover intentions differ by routes to certification for Wisconsin agriculture teachers with fewer than three years of experience teaching agriculture?), the turnover intentions construct was analyzed by computing means and a non-parametric t-test. A Mann-Whitney *U* Test and Spearman rho correlations were calculated to compare turnover intentions between traditional and alternative certification groups. Data for all research objectives were parsed by traditional or alternatively certified teachers. A significance level of $\alpha \leq .05$ was adopted for this study. Effect sizes were adapted from Cohen (1992): $\rho > .10$ = small effect, $\rho > .30$ = medium effect, and $\rho > .50$ = large effect.

Findings

The first research question focused on the demographic information collected from respondents ($n = 35$) to describe their personal and teaching characteristics. Respondents ranged from 23 to 55 years old with the mean age being 29.91. Fifty percent of respondents were under 30 years old and 11.50% were over 40 years old. Of the respondents, 71.40% were female and 28.60% male and the majority (97.10%) identified as "White, European American, Non-Hispanic."

To understand their teaching characteristics, respondents were asked a series of questions regarding their teaching experience and location. Forty percent of responding teachers taught for two years. The majority of respondents indicated they taught in a rural setting (71.30%), with 17.10% in a suburban setting, and 8.60% teaching in an urban setting. Alternatively certified teachers were the only respondents who indicated they taught in an urban setting. While 68.60% of respondents had a full-time teaching assignment in agriculture, 22.90% had a full-time position, but taught other content in addition to agriculture, and 8.60% taught agriculture part-time.

The second research question sought to identify the routes to certification and preparation of the teachers. In regards to their highest level of education completed, 80% of respondents held a bachelor's degree, 17% received a master's degree, and one respondent (2.90%) indicated they possessed a doctoral or other professional degree (Table 1). There was no observable difference when comparing traditionally and alternatively certified teachers in regards to their highest level of education.

Table 1

Highest Level of Education (n=35)

	TC		AC		Total	
Level of Education	*f*	%	*f*	%	*f*	%
Bachelor's Degree	22	63.00	6	17.00	28	80.00
Master's Degree	3	8.50	3	8.50	6	17.00
Doctoral or other professional degrees			1	2.90	1	2.90

In describing their route to certification, 71.4% of respondents reported they completed a traditional teacher preparation program as part of a bachelor's degree program. There were no respondents who indicated they had participated in a traditional teacher preparation program as part of a graduate program. The remainder of respondents either completed an alternative certification

programs or an experienced-based license. Table 2 highlights the routes to earning a teaching license with frequencies and percentages.

Table 2

Route to earning teaching license (n = 35)

Route	*f*	*%*
A traditional teacher preparation program as part of a bachelor's degree	25	71.40
A traditional teacher preparation program as part of a graduate program	0	0.00
An alternative teacher preparation program completed before being hired	4	11.40
An alternative teacher preparation program completed after being hired	3	8.60
Experience-based license	3	8.60

Eight traditionally certified respondents signified they had a teaching license in another area before adding an agriculture license. Of these respondents, 75% had a license in a science area prior to adding an agriculture license. Two respondents indicated they held a language license and one individual was licensed in physical education and health. There was one respondent who listed they held a substitute teaching license prior to gaining an agriculture license.

Respondents were asked to select all items that applied to them from a list of statements about why they became a teacher (see Table 3). The respondents who were traditionally certified (71.4%), noted that as an undergraduate they planned to be a teacher and took all the necessary courses to become certified. For alternatively certified respondents, 70% (n = 7) indicated that as an undergraduate they did not plan to teach and therefore chose a route to becoming a certified teacher following their undergraduate degree that allowed them to work full-time (50%), was based on a program that was conveniently located (40%), and that had required coursework and training which fit their schedule (40%).

Table 3

Reason to Obtain Teaching License (n = 35)

	TC (n = 25)		AC (n = 10)		Total (n = 35)	
Choice	*f*	*%*	*f*	*%*	*f*	*%*
As an undergraduate, I planned to be a teacher and so took all necessary courses to become certified.	24	96.00	1	10.00	25	71.40
As an undergraduate, I didn't have plans to teach.	2	8.00	7	70.00	9	25.70
I chose a route to becoming a certified teacher based on a program that was conveniently located.	2	8.00	4	40.00	6	17.10

Table 3

Reason to Obtain Teaching License (n = 35) Continued…

I chose a route to becoming a certified teacher that would allow me to become certified while working full-time.	0	0.00	5	50.00	5	14.30
I chose a route to becoming a certified teacher based on the requirements of the school, district, or state in which I wanted to teach.	2	8.00	2	20.00	4	11.40
As an undergraduate, I was intent on pursuing a specific, non-teaching career.	1	4.00	3	30.00	4	11.40
I chose a route to becoming a certified teacher that required coursework and training that fits my schedule.	0	0.00	4	40.00	4	11.40
I chose a route to becoming a certified teacher based on financial considerations.	1	4.00	2	20.00	4	11.40
I pursued teaching as part of my master's studies.	0	0.00	2	20.00	2	5.70

Note. Respondents marked all statements that applied to them.

Research question 3 sought to identify respondent's turnover intentions and if they differed by certification route. Turnover intentions were measured by a six-point scale ranging from strongly disagree (1) to strongly agree (6). Overall, the respondents had moderately low turnover intentions ($M = 2.95$, $SD = 1.13$). Alternatively certified respondents had a slightly higher turnover intention ($M = 3.04$, $SD = 1.13$) than traditionally certified teachers ($M = 2.91$, $SD = 1.16$). A Mann-Whitney U test indicated there was no statistically significant difference between the routes to certification and turnover intentions ($U = 130.50$, $p = .843$), with effect size measurements showing certification had a negligible effect (Cohen, 1988) on teachers' turnover intentions ($r_s = .03$).

Conclusions and Discussion

The purpose of this study was to examine the routes to certification and turnover intentions of Wisconsin agriculture teachers with fewer than three years of teaching agriculture. Prior studies in agricultural education have studied various aspects of alternatively certified agriculture teachers, no research has specifically focused on the type of certification or turnover intentions. While this research is limited to a small, non-generalizable population of agriculture teachers, it provides a foundation for further research in understanding the relationship between certification and turnover intentions.

The first objective sought to identify participants demographic characteristics. The majority of respondents were female, white, under 30 years of age and taught agriculture full-time in a rural school district. The second objective examined the routes to certification and teacher preparation of participants. The majority of respondents' highest level of education was a bachelor's degree from a traditional teacher preparation program. Ten respondents (28.60%) were

alternatively certified through an alternative teacher preparation program or an experienced-based license. Additionally, eight respondents were traditionally certified, but added an agriculture license to an existing license. The findings show that traditionally certified teachers in the study knew they wanted to teach as an undergraduate. Teachers certified through alternative routes did not decide to teach until after they completed their bachelor's degree. In pursuing alternative certification, respondents chose a program that allowed them to work full time, was conveniently located, and fit their schedule.

The third objective investigated how turnover intentions differed between routes to certification. The respondents reported a moderately low turnover intention, which matches the findings by Sorensen et al. (2016), with no statistical difference between traditionally and alternatively certified teachers. In accordance with the conceptual framework based on the work of Constantine et al. (2009), the teacher candidate's personal and professional background influenced their route to teacher certification, however, there was no link found regarding their background and certification on turnover intentions.

A key finding from this research is the diversity of the routes to certification of the alternatively certified group of teachers. Within this limited population, there were three different routes to certification. Due to the varying requirements of traditional and alternative routes to certification, future research should identify both traditional and alternative programs of study, as well as required coursework, field experiences, and other certification requirements for agriculture teachers. Conflicting definitions of alternative certification within the literature and from state-to-state is one reason behind confusion around tracking and supporting alternatively certified teachers. These findings regarding the routes to certification would allow for clarity on a national level, as well as recognition of the complexity of teacher preparation and certification. Additionally, this study highlighted a unique population of traditionally certified educators who are adding an agriculture license. While these teachers have completed a teacher preparation program through a university, we do not have data on their agricultural content knowledge or the number currently in the profession. As we seek to recruit agriculture teachers, this population of educators should be considered.

With the ongoing refrain of the teacher shortage both nationally (Sutcher et al., 2016) and in agricultural education (Smith et al., 2018), the discussion regarding the connection between the routes of certification and turnover intentions of agriculture teachers is timely. As the teaching profession continues to see multiple routes to certification (Ingersoll & Smith, 2003), agricultural education needs to recognize that not all of our teachers are being certified through traditional teacher education programs. While previous studies on alternatively certified agricultural teachers have identified levels of self-efficacy (Roberts & Dyer, 2004; Robinson & Edwards, 2012), pedagogical awareness (Rocca & Washburn, 2006; Young & Edwards, 2006), no research has explored how alternatively certified agriculture teachers are being certified. This study identified four different routes to becoming certified in one state and provides evidence for the myriad of options individuals have to become licensed agriculture teachers. Additionally, the findings of Redding and Smith (2016) and Robinson and Edwards (2011) of alternatively certified teachers being more likely to leave teaching was not corroborated with this research as there was no correlation found between certification route and turnover intentions.

Implications

As the agricultural education profession seeks to recruit and retain qualified teachers, teachers entering through alternative routes to certification need to be considered as a solution to the challenge (Bowling & Ball, 2016). Further research should seek to confirm the findings in this

study in regard to understanding how teachers are becoming certified, as well as the turnover intentions of traditionally and alternatively certified teachers nationally. If route to certification is not a predictor of turnover intentions, additional research should be completed to identify other possible variables leading to teacher turnover. Another implication, specifically for teacher education, is alternatively certified teachers chose to become certified in ways that were convenient for them. As the profession focuses on recruiting agriculture teachers, reasons why individuals choose their route for certification, especially alternative certification, should be considered when providing programming in teacher education. We are left with far more questions than answers, but with an increase in the number of alternatively certified agriculture teachers entering the profession (Smith et al., 2018), we need to continue further research.

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