

INSERVICE NEEDS OF TRADITIONALLY AND ALTERNATIVELY CERTIFIED AGRICULTURE TEACHERS

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Abstract

Each year, many alternatively certified agriculture teachers are hired. Practice dictates that agriculture teachers, regardless of certification method, have a continuing desire and need for inservice training. However, do these two groups of teachers have the same inservice needs? The literature supports the notion that different groups of teachers have dissimilar inservice needs. However, missing from the agricultural education research base are studies that examined the inservice needs of alternatively certified agriculture teachers. The purpose of this study was to fill that void. Based on the findings of this study, traditionally certified teachers have greater self-perceived inservice needs in the FFA and SAE supervision, instruction and curriculum, technical agriculture, program management and planning, and teacher professional development constructs. When examining specific items, traditionally certified agriculture teachers have greater self-perceived inservice needs in 46 of the 80 items.

Introduction/Theoretical Framework

Good teachers are born, not made. This seems to be the premise under which many state departments of education are operating today, at least in their certification requirements. Recent trends have shown relaxed certification requirements that allow mid-career people to enter teaching. This model is employed in numerous teacher certification programs, including *Troops to Teachers* and *Transition to Teaching*, both of which are funded by the *No Child Left Behind Act*. These programs seek to recruit people with at least some technical knowledge, and place them in teaching vacancies with minimal preservice training. From this perspective, content knowledge may be perceived to have greater importance than pedagogical knowledge.

Each year, uncertified agriculture teachers are hired, largely due to a shortage of university-prepared agriculture teachers. This shortage has existed for at least 37 years (Camp, Broyles, & Skelton, 2002). As a result, school administrators hire uncertified teachers to fill vacancies that

might otherwise go unfilled. The task then becomes to prepare these individuals with the necessary skills to be successful. This on-the-job training may or may not affect the quality of instruction that students receive and logically affects the type of support teacher preparation programs offer.

Agriculture teachers, regardless of certification method, have a continuing desire and need for inservice training to ensure their skills are current (Barrick, Ladewig, & Hedges, 1983). Departments of agricultural education have historically, as part of their mission, had the function of identifying and delivering relevant inservice workshops to agriculture teachers (Barrick et al., 1983). However, teacher educators often have had difficulties in identifying appropriate topics to include (Birkenholz & Harbstreit, 1987; Washburn, King, Garton, & Harbstreit, 2001). This problem may be compounded by the influx of uncertified teachers who often possess different backgrounds and experiences than traditionally certified teachers. It is likely that these two groups of teachers do not have the same inservice needs.

Research has been a common methodology used to determine topics for pertinent inservice training (Birkenholz & Harbstreet, 1987; Claycomb & Petty, 1983; Layfield & Dobbins, 2002; Washburn et al., 2001). However, the literature base is lacking in knowledge about the inservice needs of alternatively certified agriculture teachers.

It should surprise few that the inservice needs of agriculture teachers appear to change over time. In a 1987 study of beginning agriculture teachers in Missouri, Birkenholz and Harbstreet found the greatest needs for inservice training to be in using microcomputers in the classroom, developing skills in agribusiness management, developing skills in electricity, training teams for vocational agriculture and FFA contests, and assisting students with SOEP records. Nine years later, Garton and Chung (1996) reported that the greatest inservice needs of the same population had changed to completing reports for local/state administrators, motivating students to learn, preparing FFA degree applications, developing an effective public relations program, and preparing proficiency award applications.

According to several researchers, the inservice needs of agriculture teachers also vary with teaching experience (Birkenholz & Harbstreet, 1987; Claycomb & Petty, 1983; Layfield & Dobbins, 2002; Washburn et al., 2001). Layfield and Dobbins noted that beginning teachers often have different needs than do experienced teachers. The researchers identified such basic tasks as utilizing a local advisory committee, developing local adult education programs, organizing fund raising activities for the local FFA chapter, preparing agriculture/FFA contest teams, and developing Supervised Agricultural Experience (SAE) opportunities for students as being of greatest need for beginning teachers. In contrast, experienced teachers needed inservice in using computers in classroom teaching, preparing FFA degree applications, preparing proficiency award applications, using multimedia equipment, and teaching record keeping skills.

According to Washburn et al. (2001), inservice needs vary by geographic location.

The researchers reported that as much as one-third of the inservice needs listed in Kansas and Missouri varied between the two states, even though the two states are in the same geographic regions and share a common border. However, this finding seems logical since agricultural education programs are state driven, and as such needs vary from state to state.

Little is known about the inservice needs of uncertified agriculture teachers who seek certification by alternative methods. However, research from academic areas other than agricultural education indicates differences in the needs of traditionally versus alternatively certified teachers. Wayman, Foster, and Mantle-Bromley (2003) reported the greatest differences between the two groups of teachers to be in "teacher skills," with the greatest similarities to be in "people skills." Wash, Lovedahl, and Paige (2000) found no differences in receptivity to change and involvement in professional development activities of traditionally and alternatively certified technology education teachers. Alternatively certified teachers were found to be as likely to participate in inservice activities and make appropriate changes as traditionally certified teachers. In a study of traditionally and alternatively certified marketing teachers, Truell (1999) reported significant differences in several areas. Traditionally certified teachers had a higher level of concern for understanding community relations, cultures, and traditions; formulating instructional objectives; sequencing instruction; explaining subject matter; planning and preparing lesson plans; and handling controversial topics. Alternatively certified teachers reported greater concern for such simple tasks as grading tests.

The literature supports the notion that dissimilar groups of teachers have dissimilar inservice needs. Likewise, research tells us that the inservice needs of teachers change over time, especially in subject areas as technologically intense as agriculture. The literature base also indicates that the amount of teaching experience affects the inservice needs of agriculture teachers, and shows that needs also vary by state. However, missing from the agricultural education research

base are studies that examined the inservice needs of alternatively certified agriculture teachers. Research from other academic areas indicates that there are differences in inservice needs between traditionally and alternatively certified teachers, but it is not clear if these differences hold true for agriculture teachers. Knowledge of this information should assist university teacher education faculty in providing meaningful inservice for both traditionally and alternatively certified teachers. The situation may very well exist that two very different types and levels of inservice may be needed for the two groups.

Purpose/Objectives

The purpose of this study was to compare the self-perceived inservice needs of traditionally and alternatively certified agricultural education teachers in Florida. To achieve this purpose, this study had three objectives:

1. To describe the self-perceived inservice needs of traditionally certified agriculture teachers.
2. To describe the self-perceived inservice needs of alternatively certified agriculture teachers.
3. To compare the differences in self-perceived inservice needs between the two groups.

Procedures

The instrument used in this study was adapted from instruments used by Garton and Chung (1996) and Washburn et al. (2001). The instrument contained 80 items and was divided into the following constructs: FFA and SAE Supervision, Instruction and Curriculum, Technical Agriculture, Program Management and Planning, and Teacher Professional Development. Respondents were asked to rate their need for inservice education for each item using a 5-point Likert-type scale. The scale ranged from no need (1) to a very strong need (5). The instrument was evaluated for face and content validity by an expert panel. Reliability as a measure of internal consistency was established using

Cronbach's alpha. Reliability values were .88, .95, .94, .95, and .91 respectively.

This census study utilized a selected population of agriculture teachers who attended the state FFA convention, or agriculture teachers' conference ($N=151$) in the summer and fall of 2002. By use of a coding process, no duplication of respondents was allowed. The instruments were administered on-site during each of the events. Usable results were obtained from 142 of the 151 respondents for a 94% usable response rate. Since it was reasoned that the teachers who would participate in inservice training were likely those who completed the questionnaire, no effort was made to control for non-response error. According to Miller and Carr (1997), coaxing responses from non-respondents in this situation would likely have skewed the results and affected the inservice training decisions made based upon these results. Given that a census of the population was used, data were analyzed using only descriptive statistics. Also, to facilitate an easier understanding of the results, the responses of "Strong Need" and "Very Strong Need" were combined into "High Need." Traditionally and alternatively certified teachers were compared based on the number of teachers who indicated they had a "High Need" for an inservice item. Construct grand means are used to compare groups. To further enrich the data presentation, selected individual items are also discussed.

For the purposes of this study, a traditionally certified teacher was defined as a teacher who qualified for certification by earning an undergraduate agricultural education degree. Alternatively certified teachers were defined as those who earned their certification by other means and applied directly to the state department of education for certification. The certification method utilized by each alternatively certified teacher in this study was not ascertained.

Findings

Slightly less than half of the respondents in this study were traditionally certified in agricultural education ($n=70$). Of the remaining participants, 61 majored in

another agricultural field, two majored in science, and nine majored in an unrelated field. A majority of the respondents ($n=95$) were male. The overall mean teaching experience of respondents was 13.7 ($SD = 10.2$) years. Interestingly, there was little difference in teaching experience between the two groups. Traditionally certified teacher had taught an average of 13.7 years ($SD = 9.9$), while alternatively certified teachers had taught an average of 13.8 years ($SD = 10.4$).

The first objective of this study sought to describe the self-perceived inservice needs of traditionally certified agriculture teachers, the second to describe the self-perceived inservice needs of alternatively certified agriculture teachers, and the third to compare the differences in self-perceived inservice needs between the two groups of teachers. The objectives of this study were addressed by examining each of the constructs identified in the instrumentation.

FFA and SAE Supervision

The grand mean for traditionally certified teachers was 3.061, $SD = .85$ (see Table 1). As indicated by the percentage of teachers with a high need, the greatest needs for inservice training were for preparing

proficiency award applications (59%), preparing for career development events (56%), and developing SAE opportunities for students (49%). The grand mean for alternatively certified agriculture teachers was 3.057, $SD = .92$. The items of highest need for this group of teachers were preparing proficiency award applications (50%) and preparing for career development events (50%).

When comparing traditionally and alternatively certified agriculture teachers, a minimal difference ($M = 3.061$ and 3.057 , respectively) was found between the grand means of the FFA and SAE supervision construct. However, traditionally certified teachers expressed higher levels of inservice need than did alternatively certified teachers in six of the nine individual items that composed this construct. A total of 43% of the alternatively certified teachers indicated a high need for organizing and maintaining an alumni association, as compared to 36% of traditionally certified teachers. Likewise, 50% of alternatively certified teachers indicated a high need for inservice in preparing proficiency award applications item, whereas 59% of traditionally certified teachers expressed a high level of need in this area.

Table 1
Teachers with High Needs in FFA and SAE Supervision by Certification Method

Item	Traditional (<i>n</i> = 70)		Alternative (<i>n</i> = 72)	
	<i>M</i> = 3.061 <i>SD</i> = .85		<i>M</i> = 3.057 <i>SD</i> = .92	
	<i>f</i>	%	<i>f</i>	%
Preparing proficiency award applications	41	59	35	50
Preparing for career development events	39	56	35	50
Developing supervised agricultural experience opportunities	34	49	21	44
Preparing program of activities and national chapter applications	33	47	30	42
Supervising SAE programs (traditional and non-traditional)	29	41	30	43
Preparing FFA degree applications	25	36	27	39
Organizing and maintaining an alumni association	25	36	30	43
Supervising show animal SAE projects	18	26	13	19
Supervising CO-OP/OJT programs	18	26	16	23

Instruction and Curriculum

The grand mean for traditionally certified agriculture teachers for this construct was 3.15, *SD* = .86 (see Table 2). The greatest inservice need for this group was in changing the curriculum to meet changes in technology (57%). The majority of traditionally certified teachers had a high need for inservice training in using computer technology and computer applications (51%), motivating students (51%), and teaching leadership (51%). The grand mean for alternatively certified agriculture teachers was 2.98, *SD* = .87. As was the case with traditionally certified teachers, the greatest inservice need of alternatively certified teachers was in changing the curriculum to meet changes in technology (56%).

When comparing the inservice needs of the two groups of agricultural teachers,

traditionally certified teachers indicated a greater need than alternatively certified teachers (*M* = 3.15 and 2.98, respectively). Traditionally certified teachers indicated a greater need for 15 of the 19 items in this construct. For inservice in using computer technology and computer applications, 51% of traditionally certified teachers indicated a high need, compared with only 37% of alternatively certified teachers. Likewise, for inservice on modifying lessons for special needs and ESOL students, 43% of traditionally certified teachers indicated a high level of need, whereas only 28% of the alternatively certified teachers indicated a high need. Interestingly, 20% of alternatively certified teachers indicated a high need for managing student behavior, compared to 32% of traditionally certified teachers.

Table 2
Teachers with High Needs in Instruction and Curriculum by Certification Method

Item	Traditional (<i>n</i> = 70)		Alternative (<i>n</i> = 72)	
	<i>M</i> = 3.15 <i>SD</i> = .86		<i>M</i> = 2.98 <i>SD</i> = .87	
	<i>f</i>	%	<i>f</i>	%
Changing the curriculum to meet changes in technology	39	57	38	56
Using computer technology and computer applications	36	51	26	37
Motivating students (teaching techniques and ideas)	35	51	31	46
Teaching leadership	36	51	34	49
Modifying curriculum and courses to attract high quality students	34	49	33	48
Integrating science into agricultural instruction	34	49	29	42
Teaching in laboratory settings	32	47	32	46
Integrating state performance tests and benchmark standards	32	46	33	46
Developing a core curriculum for agricultural education	31	45	24	34
Teaching problem-solving and decision making skills	30	43	25	36
Modifying lessons for special needs and ESOL students	29	43	19	28
Integrating Math into Agricultural Instruction	29	42	27	40
Developing critical thinking skills in your students	28	41	27	39
Designing programs for non-traditional and urban students	23	33	24	34
Managing student behavior	22	32	14	20
Testing and assessing student performance	20	29	14	20
Understanding learning styles	17	25	15	21
Developing a magnet program or academy	17	24	20	29
Planning and effective use of block scheduling	14	21	20	29

Technical Agriculture

The grand mean for traditionally certified agriculture teachers for this construct was 3.11, *SD* = .64 (see Table 3). The majority of teachers indicated a high level of need for inservice training on advances in biotechnology (59%), animal reproduction (55%), aquaculture (54%), greenhouse operation and management

(54%), genetic engineering (53%), animal health (51%), agricultural sales and marketing (51%), and global positioning systems (50%). The grand mean for alternatively certified agriculture teachers was 3.09, *SD* = .86. The majority of the respondents in this group indicated a high level of need for only one item, advances in biotechnology (61%).

Table 3
Teachers with High Needs in Technical Agriculture by Certification Method

Item	Traditional (<i>n</i> = 70)		Alternative (<i>n</i> = 72)	
	<i>M</i> = 3.11 <i>SD</i> = .64		<i>M</i> = 3.09 <i>SD</i> = .86	
	<i>f</i>	%	<i>f</i>	%
Advances in biotechnology	41	59	43	61
Animal reproduction	38	55	31	44
Greenhouse operation and management	37	54	28	39
Aquaculture	37	54	35	49
Genetic engineering	37	53	33	47
Animal health	35	51	28	41
Agricultural sales and marketing	35	51	22	31
Global positioning systems (GPS)	35	50	29	42
Landscaping	34	49	28	39
Record keeping skills	33	48	28	39
Food science and food safety	31	46	21	30
Animal nutrition	31	45	26	37
Tissue Culture	29	42	29	42
Global agriculture issues	29	42	27	39

Item	Traditional (<i>n</i> = 70)		Alternative (<i>n</i> = 72)	
	<i>M</i> = 3.11 <i>SD</i> = .64		<i>M</i> = 3.09 <i>SD</i> = .86	
	<i>f</i>	%	<i>f</i>	%
Plant identification and use	29	41	32	46
Forestry	28	41	28	41
Restricted pesticide license training	28	41	32	46
Financial management	28	41	24	34
Meat science	27	39	25	36
Plant propagation	25	36	32	45
Natural resources management	25	36	29	43
Agriculture Mechanics (small project construction)	23	33	27	39
Floriculture	22	32	24	34
Turfgrass	22	32	26	37
Water quality/water regulations	22	31	28	40
Soil science	21	30	23	33
Forages	21	30	16	24
Electricity and controls	20	29	22	32
Small engine technology	17	24	23	33
Agriculture mechanics (large project construction)	17	24	18	26
Tool and machine conditioning and repair	13	19	19	27
Waste management	12	17	22	32
Oxy-Acetylene welding and plasma cutting	11	16	21	30

When comparing the inservice needs of traditionally certified and alternatively certified teachers, similar needs were observed, as indicated by the grand means ($M = 3.11$ and 3.09 , respectively). Differences were observed in several of the individual items. Sixteen percent of traditionally certified teachers indicated a high level of inservice need for oxy-acetylene welding, compared with 30% for alternatively certified teachers. Similarly, 32% of alternatively certified teachers had a high need for waste management, compared to 17% of traditionally certified teachers. In contrast, 46% of traditional teachers indicated a high need for inservice in food science and safety, compared to 30% of alternatively certified teachers. Similarly, 51% of traditionally certified teachers indicated a high need for agricultural sales and service, compared to 31% of alternatively certified teachers.

Program Management and Planning

The grand mean for traditionally certified teachers in this construct was 3.18, $SD = .94$ (see Table 4). The majority of traditionally certified teachers indicated a high need for inservice in writing grant proposals for external funding (70%), building the image of agriculture programs and courses (57%), recruiting and retaining quality students (57%), and establishing a working relationship with local media (54%). Alternatively certified teachers had a grand mean of 3.10, $SD = 1.02$ for this construct. The majority of alternatively certified teachers indicated a high need for inservice in writing grant proposals for external funding (64%), building the image of agriculture programs and courses (58%), and recruiting and retaining quality students (54%).

A comparison of grand means reveals a slight difference ($M = 3.18$ and 3.10) between traditionally and alternatively certified teachers, respectively. Differences were observed for several items. Fifty-four percent of traditionally certified teachers had a high need for inservice in establishing a working relationship with local media, compared to 41% of alternatively certified teacher. Similarly, 41% of traditionally certified teachers had a high need for inservice in evaluating the local agriculture program, compared to 22% of alternatively certified teachers. In contrast, 47% of alternatively certified teachers had a high need for planning and maintaining a school land lab, compared to 33% of traditionally certified teachers.

Teacher Professional Development

The grand mean for traditionally certified teachers for items in this construct was 3.47, $SD = 1.02$ (see Table 5). The majority indicated a high level of need for inservice in managing and reducing work-related stress (64%), time management tips and techniques (61%), and professional growth and development (51%). The grand mean for alternatively certified teachers for this construct was 3.21, $SD = 1.31$. The majority of this group indicated a high level for training in managing and reducing work-related stress (52%) and time management tips and techniques (51%).

When comparing traditionally and alternatively certified teachers, the former indicated the highest level of need in this construct (grand means of 3.47 and 3.21). When examining individual items, a greater percentage of traditionally certified teachers indicated a high level of need for inservice on all the items in this construct.

Table 4
Teachers with High Needs in Program Management and Planning by Certification Method

Item	Traditional (<i>n</i> = 70)		Alternative (<i>n</i> = 72)	
	<i>M</i> = 3.18 <i>SD</i> = .94		<i>M</i> = 3.10 <i>SD</i> = 1.02	
	<i>f</i>	%	<i>f</i>	%
Writing grant proposals for external funding	49	70	45	64
Building the image of agriculture programs and courses	40	57	40	58
Recruiting and retaining quality students	39	57	38	54
Establishing a working relationship with local media	37	54	29	41
Developing business and community relations	34	49	27	39
Establishing a public relations program	30	43	24	35
Managing learning labs	28	41	34	48
Utilizing a local advisory committee	29	41	25	35
Evaluating the local agriculture program	28	41	15	22
Completing reports for local and state administrators	26	38	19	28
Fundraising	26	38	29	41
Planning and maintaining a school land lab	23	33	33	47
Building collaborative relationships	22	32	22	33
Conducting needs assessments and surveys to assist in planning agriculture programs	21	30	19	28
Developing an adult program	10	14	8	12

Table 5
Frequencies of Low and High Needs in the Teacher Professional Development Construct

Item	Traditional (<i>n</i> = 70)		Alternative (<i>n</i> = 72)	
	<i>M</i> = 3.47		<i>M</i> = 3.21	
	<i>SD</i> = 1.02		<i>SD</i> = 1.31	
	<i>f</i>	%	<i>f</i>	%
Managing and reducing work-related stress	44	64	35	52
Time management tips and techniques	42	61	35	51
Professional growth and development	35	51	32	48
Becoming a member of the total school community	26	39	20	30

Conclusions, Implications, and Recommendations

Based upon the stated research problem and the objectives of this study, several conclusions can be drawn. First, nearly half of the teachers in this study received their certification by some means other than an undergraduate agricultural education degree. This is much larger than the national average of just over 13%, as indicated by Camp et al. (2002).

The first objective of this study sought to describe the self-perceived inservice needs of traditionally certified agriculture teachers. The findings of this study indicate that traditionally certified teachers have the highest level of self-perceived inservice needs in the Professional Development and the Program Planning and Management constructs, followed in decreasing order by Instruction and Curriculum, Technical Agriculture, and FFA and SAE Supervision. The greatest individual self-perceived inservice need for this group was writing grant proposals for external funding. These findings are consistent with the findings presented by Garton and Chung (1996) and Washburn et al. (2001).

The second objective of this study sought to describe the self-perceived

inservice needs of alternatively certified agriculture teachers. The findings of this study indicate that the greatest area of self-perceived inservice needs of this group are in the Professional Development construct, followed in decreasing order by the Program Planning and Management, Technical Agriculture, FFA and SAE Supervision, and Instruction and Curriculum constructs. When examining individual items, this group of teachers indicated the greatest need for writing grant proposals for external funding. This is a new finding. No previous studies had determined the inservice needs of alternatively certified agriculture teachers.

The third objective of this study sought to compare the differences in self-perceived inservice needs between the two groups of teachers. Based upon the findings of this study, traditionally certified teachers have greater self-perceived inservice needs than do alternatively certified teachers in FFA and SAE Supervision, Instruction and Curriculum, Technical Agriculture, Program Management and Planning, and Teacher Professional Development. When examining specific items, a greater percentage of traditionally certified agriculture teachers expressed high inservice needs in 46 of the 80 items that comprised the constructs

(58%). These conclusions are consistent with the findings of Truell (1999) for teachers in business education.

This study verifies the need for teacher education programs to address the changing demographics of agriculture teachers caused by chronic teacher shortage. Nearly half of the teachers in the study did not have an undergraduate degree in agricultural education. This has several implications to Agricultural Education departments, since alternatively certified teachers usually do not have direct ties with the department. Therefore, it is recommended that Agricultural Education departments work to establish relationships with this group of teachers and take an active role in alternative teacher certification.

When examining the inservice needs of traditionally certified agriculture teachers, several interesting observations can be made. First, the Professional Development construct has several items that deal with teacher stress and time management. Teacher attrition and teacher burnout suggest that teaching is a stressful, time-demanding job. The results of this study support the premise that traditionally certified agriculture teachers are facing these issues. It is recommended that inservice workshops be developed to assist these teachers address these issues. Furthermore, preservice teacher education programs should examine their curricula to determine if these topics are addressed. Secondly, traditionally certified teachers had the lowest level of inservice needs in the Technical Agriculture and FFA and SAE Supervision constructs. This implies that preservice agricultural education programs are likely preparing teachers adequately in these areas. Third, the recent trend of reducing educational budgets may be evidenced by both groups of teachers, as indicated by the greatest inservice need of writing grant proposals for external funding. Operating a successful agricultural education program often requires funding beyond school district budgets. It is recommended that inservice workshops be delivered that address this issue.

The inservice needs of alternatively certified agriculture teachers also yielded several interesting findings. First, this group

expressed the lowest inservice needs in the Instruction and Curriculum construct. Given the limited pedagogical training of most of these teachers, the opposite was expected. Perhaps this group of teachers lacks sufficient knowledge to adequately understand the value of pedagogy, or perhaps alternative certification programs do a better job of preparing teachers in this area. Regardless, this phenomenon warrants further investigation. Second, as with traditionally certified teachers, alternatively certified teachers expressed the greatest inservice needs in the Professional Development construct. Apparently, regardless of certification method teacher stress and time management issues plague teachers. Third, alternatively certified teachers also indicated the individual item of writing grant proposals as the greatest need. This indicates that funding issues are important to both groups of teachers.

Comparing the inservice needs of traditionally and alternatively certified agriculture teachers reveals several discrepancies in needs. Traditional thinking is that professionally prepared agriculture teachers (teachers with a degree in agricultural education) would be better prepared than their counterparts who entered teaching through alternative certification. However, the results of this study do not support this assumption. If traditionally certified teachers were better prepared, why do they indicate greater inservice needs in four of the five constructs and in 58% of the individual items? One explanation may be that alternatively certified teachers lack sufficient professional knowledge to accurately indicate their deficiencies. This group of teachers may have adequate skills to operate in their comfort zones, but have little desire to increase their professional skills and thus express lower needs for inservice training. It is also possible that alternatively certified teachers have lower inservice needs because they typically are hired to teach specialized courses (e.g. animal science, horticulture) as opposed to general agriculture subject matter. Contrary to this proposition however, is the finding that alternatively certified teachers tended to have greater needs for agriculture mechanics items and the plant science items, whereas

traditionally certified teachers tended to have the greater needs for scientific items. Perhaps the focused degrees (i.e. animal science) of alternatively certified teachers created voids in technical agriculture knowledge for these individuals covered in the broader agricultural education degrees of traditionally certified teachers. Further research is warranted to examine this phenomenon.

The findings of this study generate almost as many questions as answers. Do these results hold true in other states? Do alternatively certified teachers have a connection with university agricultural education departments? Is there a difference in teaching performance between traditionally and alternatively certified teachers? Are there differences in the problems faced by these two groups of teachers? What led alternatively certified teachers to enter agricultural education? It is recommended that all of these questions be considered for further research.

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