

ABSTRACT

URICCHIO, CASSANDRA KAY. Assessing the Agriculture Teacher Workforce in New England. (Under direction of Dr. Gary Moore).

High quality teachers are an essential piece of the agricultural education model and directly influence the quality of the total program. However, there has been a steady consolidation and elimination of agricultural education teacher preparation programs in New England. In order to understand how this trend affected agricultural education in this region, an investigation into the background, preparation, and certification of the New England agriculture teacher workforce was conducted. In addition, current inservice needs of agriculture teachers were assessed using the Borich (1980) Needs Assessment model. The population for this study included all agriculture teachers currently employed in the six New England states (N = 288) during the 2010 – 2011 school year. Data were collected using both electronic and paper-based questionnaires. A total of 164 questionnaires were completed resulting in a response rate of 56.94%. The majority of respondents worked in the agricultural industry for a minimum of five years. Over two-thirds of the respondents completed a traditional teacher preparation program, mostly through on-campus programs at New England land grant universities. The majority of respondents also held a professional (highest level) teaching license in agricultural education and served as the FFA advisor. In addition, SAE participation was found to be much lower than FFA participation in agricultural education programs throughout New England.

The inservice needs of New England agriculture teachers were prioritized based on mean weighted discrepancy scores (MWDS). The top inservice needs included writing grant proposals for external funding and managing and reducing work-related stress. Alternatively certified teachers were found to have higher inservice needs than traditionally certified teachers in areas of instruction and professional development. Beginning teachers were found to have higher inservice needs than experienced teachers in areas of instruction, FFA activities, and building the program's image. Results indicated that the agriculture teacher workforce in New England is in a transitional stage. Many new teachers are being alternatively certified due to the lack of traditional agricultural education preparation programs in the region. In addition, SAE development was found to be the weakest component of the total agricultural education program in New England. In order to improve agricultural education throughout New England, high quality professional development programs need to be developed for different groups of agriculture teachers based on their identified needs.

Assessing the Agriculture Teacher Workforce in New England

by
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DEDICATION

To George, for so many reasons.

BIOGRAPHY

Cassandra Uricchio was born and raised in Enfield, Connecticut with her three brothers. Her interest in agriculture started at a young age with a love of horses. Although knowing little about them, her father encouraged her to develop her horsemanship and equestrian skills. After graduating high school second in her class, Cassie attended the University of Connecticut for Animal Science and graduated *summa cum laude*. She was actively involved in the UConn equestrian program and completed an internship with wild mustangs and burros in Texas. She then moved to Raleigh, North Carolina where she completed her Masters degree in Agricultural Education at North Carolina State University.

In 2006, Cassie was hired at Mt. Everett Regional School, a small regional high school in Massachusetts. With support from great colleagues, she started an agriscience program and chartered the Mt. Everett FFA chapter. Over the course of four years, Cassie developed and taught a variety of agriscience courses including agricultural biology, agriscience and biotechnology, fish and wildlife management, plant science, and animal science. Cassie was named the 2010 Massachusetts Agriculture Teacher of the Year. In the fall of 2010, Cassie returned to North Carolina State University full time to complete her Doctorate.

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Chapter 1: Introduction

Agricultural education offers a unique approach for teaching global agriculture, food, fiber, and natural resources systems. Instruction goes far beyond traditional classroom learning. The agricultural education program consists of three highly interrelated components: 1) Hands-on classroom and laboratory instruction that provides contextual learning, 2) Supervised Agricultural Experience (SAE) programs that provide work-based learning, and 3) Student leadership organizations, such as The National FFA Organization, that provide opportunities for leadership development, personal growth, and career success (Talbert, Vaughn, Croom & Lee, 2007). This trinity of learning provides relevant, experiential education for students. In addition, the scope of agricultural education has expanded beyond the traditional vocational offerings associated with production agriculture and farming to include the applied agricultural science and technology fields (National Research Council, 1988).

According to the Economic Research Service, the agricultural sector in the United States plays a significant role in the economy (United States Department of Agriculture, 2011). In 2011, the United States produced over \$350 billion in crop, animal, and forestry output. In addition, over 40% of total land area in the country was utilized as farmland (United States Department of Agriculture, Economic Research Service, 2011).

The agricultural industry also has a large economic impact in the New England region (United States Department of Agriculture, National Agricultural Statistics Service, 2010). The number of farms in New England increased 16% from 2002 to 2007. More than 33,000 farms accounted for over 4 million acres of farmland within the six New England states. In

2009, agricultural production in New England was valued at \$2.87 billion, with \$615 million in greenhouse and nursery products and \$554 million in milk products (United States Department of Agriculture, National Agricultural Statistics Service, 2010).

However, these numbers do not take into account the total impact of agriculture on the region's economy, which is valued at \$3.5 billion for Connecticut alone (Lopez, Joglekar, Zhu, Gunther & Carstensen, 2010). According the Department of Agricultural and Resource Economics at the University of Connecticut, the agricultural industry has a major impact on the economy, provides thousands of jobs, and provides "significant social benefits and ecosystem services" (Lopez et al., 2010, p.5).

According to the Occupational Outlook Handbook, the agriculture, forestry and fishing industry provides over 2.1 million jobs in the United States (United States Department of Labor, Bureau of Labor Statistics, 2010). Employment in these traditional agricultural fields is predicted to be stable over the next ten years for most areas, with increased employment for aquaculture and forestry. In addition, the agricultural industry is experiencing changes that may spur other employment growth; these changes include increased use of technology and science and increased demand for organic products, farmer markets, community supported agriculture, locally grown products, and international exports (United States Department of Labor, Bureau of Labor Statistics, 2010).

Yet, other agricultural occupations are predicted to grow much faster than average over the next ten years (United States Department of Labor, Bureau of Labor Statistics, 2010). These areas include biotechnology (+21%), agriculture and food science (+16%), environmental science (+29%), forest and conservation (+12%), and agricultural inspectors

(+13%). Animal care occupations are predicted to have the largest growth, including veterinarians (+33%), veterinary technicians (+36%), and animal caretakers (+21%). When considering all of these related fields together, employment in the agriculture and natural resource sectors is well over 4 million and rising in the United States (United States Department of Labor, Bureau of Labor Statistics, 2010).

Based on the economic, social, and ecological value of agriculture, offering high quality agricultural education programs in secondary schools is important. The *National Quality Program Standards for Secondary Agricultural Education* identifies seven quality program standards which each contain specific quality indicators for agricultural education. These standards include: 1) Program Design and Instruction, 2) Experiential Learning, 3) Leadership Development, 4) School and Community Partnerships, 5) Marketing, 6) Certified Agriculture Teachers and Professional Growth, and 7) Program Planning and Evaluation (The National Council for Agricultural Education, 2009). Standard six specifically reads, “Competent and technically certified agriculture teachers provide the core of the program” (The National Council for Agricultural Education, 2009, p.1). High quality teachers are essential to total program success and directly influence the quality of the other program standards. Furthermore, high quality teachers are necessary to achieve the National Council for Agricultural Education’s long-range goal:

By 2015 there will be in operation 10,000 quality agricultural education programs serving students through an integrated model of classroom/laboratory instruction, experiential learning, and leadership and personal skill development. Further, all students will be members of the FFA and have a supervised agricultural experience

that supports classroom and laboratory instruction. (The National Council for Agricultural Education, 2008, p. 1)

The highly experiential instruction, intracurricular components, and breadth of program offerings all present unique challenges to the agriculture teacher workforce. As such, the agricultural education profession requires a specialized approach to teacher education which includes training in teaching methods, teaching technology, program and curriculum planning, foundations of agricultural education, experiential components including FFA and SAE, advanced work in agricultural science and natural resources, and quality field experiences (McLean & Camp, 2000; American Association for Agricultural Education, 2001). Without specific pre-service and inservice training, the quality of the agriculture teacher workforce may not meet the needs of the expanding agricultural education program paradigm. Therefore, more research on workforce development in the profession is needed, especially in areas where agricultural teacher education programs are limited.

Advancing agriculture teacher workforce development is especially pertinent to the New England states, which have a strong agricultural education heritage but have experienced a steady decline in agricultural education leadership at both the university and state levels. In 1992, five of the six New England states offered teacher education programs in agricultural education (Fuller & Annis, 1992). Today, there are no university agricultural education departments remaining in this region. The steady elimination of state and university positions has resulted in a weakened agricultural education system in Maine (Morgan, 1996) and in many other New England states (Fuller & Annis, 1992). The University of Connecticut and University of New Hampshire still have pathways for

agricultural teacher education but have extremely small enrollments, far fewer than the number of new hires in the region (Kantrovich, 2007). So the question is: How are agriculture teachers being prepared in New England to enter the profession and are they highly qualified?

The *National Research Agenda* identified five research priority areas for agricultural education in schools: enhance program delivery models, provide a rigorous and relevant curriculum, increase access to instruction and programming, prepare highly qualified teachers, and determine the effects of agricultural education instruction (Osborne, 2006). The fourth research priority area specifically reads, “Prepare and provide an abundance of fully qualified and highly motivated agriscience educators at all levels” (p. 20). Priority initiatives for this area of agricultural education in schools include assessing the effectiveness of traditional and alternative teacher certification programs, developing effective teacher recruitment strategies, and evaluating the professional and continuing education needs of agricultural educators (Osborne, 2006). These three areas – teacher preparation, recruitment, and inservice needs – are of critical importance in New England in order to secure and retain highly qualified teachers who will ensure a strong future for agricultural education in this region.

Furthermore, research has found that inservice needs differ between traditionally and alternatively certified teachers (Roberts & Dyer, 2004; Duncan & Ricketts, 2008) and by geographical region (Washburn, King, Garton, & Harbstreit, 2001). Beginning teachers also have unique inservice needs when compared to their more experienced colleagues (Garton & Chung, 1996; Layfield & Dobbins, 2002). With the elimination of traditional agriculture

teacher preparation programs in New England, this region's workforce may have very distinct inservice needs especially for novice teachers who are alternatively certified. Thus, additional research investigating the preparation and actual needs of agriculture teachers in this area of the country is warranted.

Theoretical Framework

The theoretical framework for this study was based on strategic human resource management (SHRM) theory. This theory evolved out of the organizational management field in the late 1970s (Martin-Alcázar, Romero-Fernández & Sánchez-Gardey, 2005) and early applications to education were explored in isolated schools districts in the late 1980s and 1990s (Scribner, Smylie & Mosley, 2008). Wright and McMahan (1992) defined strategic human resource management as “the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals” (p. 298). SHRM differs from traditional human resource management in its “macro-organizational” viewpoint that aligns the integrated human resource practices with organizational goals rather than viewing each function as an independent component (Heneman & Milanowski, 2004). Using this theory, organizations vertically align their human resource practices with their employee performance competencies, which are directly aligned with the organizational goals. Organizations also horizontally align their human resource practices such that the entire human resource policy becomes an integrated approach to employee development, with each component consistently reinforcing the other components. The resulting model employs a more comprehensive, strategic approach to workforce development and management.

Smylie, Miretzky, & Konkol (2004) proposed creating a more comprehensive, strategic approach to teacher workforce development and management using the strategic human resource management theory. When applied to the field of education, SHRM can be utilized to achieve the goals of the school system by developing the teacher workforce. Through the alignment of the educational goals and strategies with human resource practices (such as teacher recruitment, preparation, and inservice training), the ability of the organization to achieve its goals is greatly improved. Strategic human resource management theory “contends that managing human resources to build organizational capacity requires the integration and a systems approach rather than the implementation of discrete functions such as recruitment, selection or induction” (Scribner, Smylie, & Mosley, 2008, p. 27). In an educational setting, strategic human resource management can be used to recruit, develop, and retain a high-quality teacher workforce in order to achieve greater student achievement.

Using the SHRM theory, Heneman & Milanowski (2004) developed a framework that aligns educational human resource management practices to teacher performance and student achievement. They assert that “a logical strategy for districts seeking to improve student achievement...is to improve teacher quality” (p. 109). Their model provides vertical alignment among student achievement goals, teacher performance competency, and human resource practices. The model also requires horizontal alignment among the human resource practices themselves and between the human resource and instructional practices of the school system. These relationships provide internal consistency and reinforcement which create synergistic results. Thus, applying the SHRM theory to education, Heneman & Milanowski (2004) “posit that teacher quality or performance competency is a primary driver

of student achievement and that teacher competency is a joint product of instructional and human resource practices” (p. 115). Their model, shown in Figure 1, served as the theoretical framework for assessing the workforce development of New England agriculture teachers in this study.

Using Heneman and Milanowski’s model, this study addressed New England agriculture teacher competency by looking specifically at the following human resource components: recruitment and selection (what are the agricultural and educational backgrounds of current agriculture teachers?); preservice preparation and induction (how are agriculture teachers being prepared for the profession?); certification and performance management (what is the certification status and competency of agriculture teachers?); inservice and professional development (what are the inservice needs of agriculture teachers and to what professional organizations do they belong?). Instructional components were also examined, focusing specifically on FFA participation, SAE programs, and curriculum alignment. In addition, the needs assessment portion of this study identified the most important teacher performance competencies as perceived by respondents, as well as identified perceived ability levels for these competencies. All of these components together determine the quality of the agricultural education program and affect student achievement. By looking at agricultural education in a comprehensive way, a more strategic approach to agriculture teacher workforce development can be utilized.

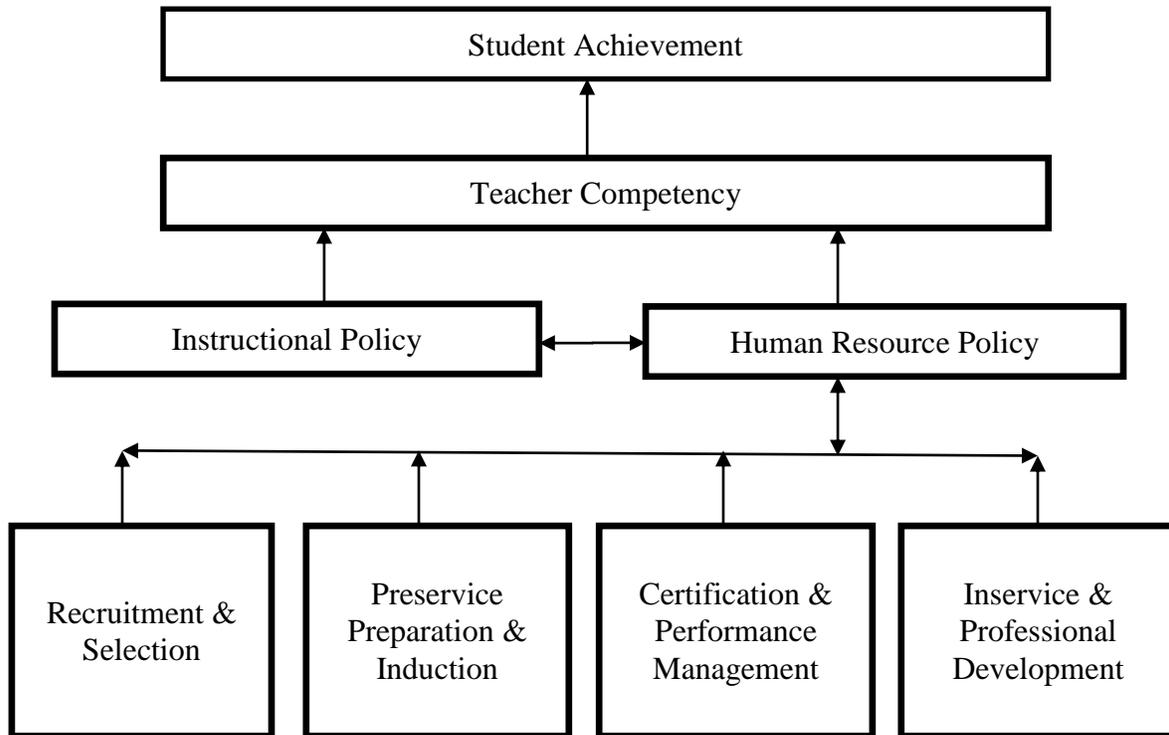


Figure 1

Adapted from Heneman & Milanowski's (2004) Model of Strategic Human Resource Management Systems Alignment

Statement of the Problem

Agriculture teacher workforce development is a key aspect in the successful expansion of agricultural education (National Research Council, 1988). Without highly qualified agriculture teachers, agricultural education cannot reach its potential in serving the diverse needs of all students. The quality of the teacher workforce is determined by successful workforce planning to attract the most suitable individuals into the teaching profession, effective teacher training and preparation to develop necessary content knowledge and pedagogical skills, and workforce management to retain qualified teachers by

providing needed support and opportunities for career development (Akiba & LeTendre, 2009).

However, there has been a steady reduction of agricultural education teacher preparation programs and state leadership positions in New England. In order to understand how this trend affects agricultural education in this region, an investigation into the current status of the agriculture teacher workforce was needed. In addition, a needs assessment of New England agriculture teachers was critical to determine the future course of action needed to ensure the successful continuation, and expansion, of this region's agricultural education programs.

Purpose of the Study

The first purpose of this descriptive study was to determine the background, preparation, and certification of New England agriculture teachers. The second purpose of this study was to identify inservice needs of agriculture teachers in New England.

Research Objectives

The following research objectives were addressed in this study:

1. Describe the agricultural and educational backgrounds of agriculture teachers in New England.
2. Describe the teaching preparation and certification of agriculture teachers in New England.
3. Describe key program characteristics of agricultural education programs in New England, including FFA participation, SAE participation, and curriculum alignment.

4. Determine New England agriculture teachers' perceived importance and competence within the curriculum and instruction, leadership and SAE development, and program planning and professional development constructs of quality agricultural education program standards.
5. Determine and prioritize the inservice needs of New England agriculture teachers using the Borich (1980) Needs Assessment Model.
6. Compare the inservice needs of agriculture teachers based on their preparation program and years of agricultural education teaching experience.

Definition of Terms

For the purpose of this study, the following words were defined:

Agricultural Education Model is made up of three interrelated areas that include classroom and laboratory instruction, Supervised Agricultural Experience (SAE) program and the National FFA student organization (Talbert et al., 2007).

Agriculture Teacher Education includes “preparing students for licensing, preparing elementary and secondary teachers to teach about agriculture, planning and providing continuing inservice education for teachers” (Fuller & Annis, 1992).

Agriculture Teacher Workforce is the entirety of workers employed, or training to be employed, as agriculture teachers.

Alternative Licensure Programs are “state-defined routes through which an individual who already has at least a bachelor’s degree can obtain certification to teach without necessarily having to go back to college and complete a college, campus-based teacher education program” (National Center for Alternative Certification, 2010).

Certified Agriculture Teacher is a “teacher meeting all qualifications for the agricultural education licensure(s) in the state for which they are or intend to be teaching” (The National Council for Agricultural Education, 2009).

Classroom and Laboratory Instruction is “the foundation for everything else that occurs in the agricultural education program...effective agricultural education instruction teaches content using the context of the plants, animals, and natural resources systems” (Talbert et al., 2007, p. 107).

Cross Endorsements are additional teaching endorsements added to the main teacher license, such as a biology endorsement added to an agricultural education teaching license.

Distance Education is defined as “institution-based, formal education where the learning group is separated, and where interactive telecommunications systems are used to connect learners, resources, and instructors” (Simonson, 2003 as cited in Schlosser & Simonson, 2010).

Intracurricular is “an integral part of the program or curriculum, as opposed to an extracurricular program or club” (Talbert et al., 2007).

National FFA Organization is the career and technical student organization for agricultural education that operates under a federal charter (Public Law 105225) and “is dedicated to making a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education” (National FFA Organization, 2011).

New England includes the six states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island.

Strategic Human Resource Management is “the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals” (Wright and McMahan, 1992, p. 298).

Supervised Agricultural Experience (SAE) is “all practical agricultural activities of educational value conducted by students outside of the regular class or laboratory instructional time for which systematic instruction and supervision are provided by the teacher, parent, employer and others. The activities may include entrepreneurial, exploratory, placement, research/experimental, analytical or directed laboratory experiences.” (The National Council for Agricultural Education, 2009).

Traditional Teacher Preparation Programs are college, campus-based teacher education programs in which students take courses on subject matter content, teaching pedagogy, and educational psychology in order to complete a bachelor’s and/or master’s degree and obtain certification to teach.

Assumption of the Study

It is important to note that the needs assessment model is “essentially a self-evaluative procedure which relies on teachers’ judgments about their own performances” (Borich, 1980, p. 42). Therefore, it was assumed that teachers would accurately and objectively self-report their own abilities.

Limitations

The population of secondary agricultural educators in New England was identified using information provided by state leaders. This information was obtained by different personnel in each state depending on the structure of the state agricultural education system.

The information was crosschecked with additional references (teacher leaders, professional organizations, etc.) and the state department of education directory when available to minimize frame error. Only those teachers who had documented teaching appointments in agriculture were included in the study. However, there was a possibility that other teachers not included in the study teach agriculture in some capacity.

Summary

High quality teachers are an essential piece of the agricultural education model and directly influence the quality of the total program. As such, the profession has identified developing highly qualified teachers as a top priority. Prior research has found that agriculture teachers have specific pre-service and inservice needs in areas such as experiential learning, leadership development, program planning, and technical agricultural knowledge and skills. However, there has been a steady consolidation and elimination of agricultural education teacher preparation programs in New England. In order to understand how this trend affects agricultural education programs in this region, an investigation into the background, preparation, and certification of the New England agriculture teacher workforce was needed. In addition, an assessment of current inservice needs of agriculture teachers was critical to determine the future course of action needed to ensure the successful continuation, and expansion, of agricultural education in New England.

Chapter 2: Review of Literature

Currently, the status of the agriculture teacher workforce in New England is unknown due to the steady consolidation and elimination of agricultural education departments from universities throughout the region. The key to agricultural education program success starts at the local level with the agriculture teachers; thus, describing the background, preparation, and certification of current agriculture teachers was an important first step in developing high quality programs. In addition, identification of current inservice needs provided important information which could then be used for improving pre-service and inservice training for agriculture teachers. This knowledge is critical for preparing highly qualified agriculture teachers and making needed improvements to ensure the future success of agricultural education in New England.

Agricultural Education in New England

In 1991, the Presidents of the New England Land Grant Universities requested a feasibility study investigating the implementation of a regional teacher preparation program in agricultural education (Fuller & Annis, 1992). Administrators, faculty, and staff at land grant universities and in state government were personally interviewed in all six New England states by University of Vermont and University of New Hampshire faculty members. Leaders in New York State were also interviewed regarding the feasibility of a New England/New York partnership. The study reported 112 public secondary schools, ranging from comprehensive high schools to county agricultural schools, and 261.5 agricultural teaching positions in the New England states in 1990. In addition, the study reported that during the 1980s, an average of 10 to 16 new agriculture teachers were needed

each year; the researchers predicted this number to increase to as many as 26 new teachers in the future as the scope of agricultural education expanded. Five of the six states offered teacher education programs in agricultural education with a total of 36 students enrolled and 5 full-time teaching faculty (Fuller & Annis, 1992).

Fuller & Annis (1992) also reported that higher education and state government leaders expressed a strong desire to update, improve, and increase agricultural education program offerings in public schools, with a focus on science and technology education and integration of agriculture at all grade levels. In addition, the steady downsizing and loss of agricultural education departments at land-grant universities generated a critical need for new approaches in teacher preparation. A regional, distance education program was presented as a viable option for New England and would draw on the strengths of each of the six land-grant universities to provide instruction in both technical agricultural content and teaching pedagogy. Key elements for a successful regional program included commitment and cooperation among university, extension, and state departments, incentives and reciprocity for all participating states, pre-service and inservice teacher training based upon model programs, and expansion of agricultural education programs in both elementary and secondary schools (Fuller & Annis, 1992).

Lastly, state leadership in agriculture and natural resources education was found to be “seriously eroded” (Fuller & Annis, 1992, p. 11). The task force recommended that the responsibility of restructuring agricultural education in New England should be facilitated by the New England land grant universities. As agricultural education programming expands to include more agricultural science and technology and increased instruction on all grade

levels, the need for strong leadership in research, outreach, and teaching/curriculum development in agricultural education at the university level will become even more critical (Fuller & Annis, 1992).

The current status of agricultural education programs, actively employed agriculture teachers, and pre-service agriculture teachers is uncertain. Morgan (1996) conducted a quantitative, comprehensive census of agricultural educators in Maine in order to determine the current status of agricultural education in this region of New England. A demographic profile of secondary agricultural educators who taught in the spring of 1996 was compiled and the perceptions of these educators regarding the appropriate roles of university and state staff, industry representatives, and youth organizations in the total agricultural education program were measured. The population consisted of ninety teachers and included any secondary teachers who taught agricultural concepts in their classes; thus, the population included certified agriculture teachers, life science and environmental science teachers, and other teachers who integrated agriculture into their curriculum. This innovative definition of agricultural educators is reflective of the national initiatives to expand agricultural education programs (National Research Council, 1988) and may have merit in determining strategies for successful growth of these programs.

Morgan (1996) indicated through her research that teachers had a common definition of agriculture consistent with the expanded definition of agriculture presented in *Understanding Agriculture: New Directions for Education*. In addition, Maine agriculture teachers valued co-curricular activities including the National FFA Organization, utilized various laboratory settings in their programs, and believed that agriculture and natural

resources were important industries in the state. Respondents also indicated that they needed more support from university faculty, the state department of education, and the agricultural industry in developing curriculum and expanding programs; however, there was a clear distrust of state staff and lack of confidence in their leadership. These findings substantiate that two major barriers in agricultural education program growth include the lack of a unified system and poor leadership structure at the state and regional level. Supports need to be implemented to effectively serve pre-service and inservice teachers and diverse student populations in all areas of agriculture, not just traditional programs. It is evident from this study that the elimination of state and university positions in agricultural education has resulted in a weakened agricultural education system in Maine.

Teacher Recruitment and Shortages

Kantrovich (2007) reported that in 2006, there were over 10,000 secondary teaching positions in agricultural education across the nation. Over 800 net replacements were needed for that particular school year. Seventy-eight positions went unfilled and 40 departments of agricultural education did not operate due to a shortage of qualified candidates. Almost 4,000 of these teaching positions were located in the North Central region of the country, the majority of which were in single teacher departments that offered a combination of agricultural courses including agricultural production, agricultural science, ornamental horticultural, agricultural mechanics, natural resources/environmental science, and agricultural sales and service. Positions reported in 2006 for the six New England states are shown in Table 1.

Table 1

New England Agriculture Teaching Positions and Program Focus in 2006 (Kantrovich, 2007)

State	Teaching Positions	Program Focus
Connecticut	104	Combination of Agricultural Courses (104)
Maine	46	Natural Resources/Environmental Science (21), Combination of Agricultural Courses (10), Exploratory/Introduction to Agriculture (6), Horticulture (5), Part time agriculture & other program (3), Unknown (1)
New Hampshire	22	Combination of Agricultural Courses (10), Natural Resources/Environmental Science (5), Agricultural Mechanics (4), Horticulture (3)
Rhode Island	9	Combination of Agricultural Courses (8), Agricultural Science (1)
Vermont	30	Combination of Agricultural Courses (14), Agricultural Mechanics (6), Natural Resources/Environmental Science (5), Horticulture (4), Production Agriculture (1)
Total	211	Combination of Agricultural Courses (146), Natural Resources/Environmental Science (31), Horticulture (12), Agricultural Mechanics (10), Exploratory/Introduction to Agriculture (6), Part time agriculture & other program (3), Agricultural Science (1), Production Agriculture (1), Unknown (1)

Note. No data available for Massachusetts.

The majority of these positions were in comprehensive high schools or vocational high schools/centers. Three and a half teaching positions were at the junior high/middle school level in the states of Maine, Rhode Island and Vermont. Most positions were in multiple teacher departments, except in Maine where all positions were reported as single teacher departments. Maine also had three teachers who taught at more than one school.

Vermont was the only New England state that reported positions with adult education responsibilities (n=2). These figures were comparable to other states in the North Central region with the exception of the departmental size. Overall, the North Central region had a higher percentage of single teacher departments, but this was not the case in five of the six New England states (Kantrovich, 2007).

The number of agricultural teaching positions has grown considerably from 1993, yet the number of newly qualified agriculture teachers has not increased to meet this demand. Over 1,000 teachers were hired nationally in 2006, the majority of whom were transfers from other school systems (n=394) and new agricultural education graduates from bachelor degree programs (n = 350). The North Central region had the highest number of hires (n=379) out of the three regions in the nation. Specific data on new agriculture teacher hires in New England are presented in Table 2. The North Central Region produced 257 newly qualified teachers in 2006, only 3 of whom were prepared in New England at the University of Connecticut. The University of New Hampshire also reported two students enrolled in agricultural education, but neither obtained licensure in 2006 (Kantrovich, 2007).

If no action is taken to reverse these trends, the agricultural education profession could see the highest shortage of teachers since 1965. Several factors contribute to this shortage, including not enough newly qualified agriculture teachers being prepared, numerous graduates accepting employment outside the classroom, and a high rate of beginning teacher attrition. Recommendations from this study included increasing the number of agricultural education faculty members at universities, devoting more attention to the recruitment of potential agriculture teachers including a special focus on recruiting

minorities, and continuing research efforts on the preparation, recruitment, and retention of quality agriculture teachers (Kantrovich, 2007).

Table 2

Sources of Agricultural Education Teachers Hired for the 2006-2007 School Year in New England (Kantrovich, 2007)

State	New Hires	Source of Agriculture Teachers
Connecticut	10	Unknown (6), New Ag Ed MS Graduates (2), Transfer from Other School (1), New Agriculture Graduate (1)
Maine	2	New Ag Ed BS/BA Graduate (1), Transfer from Other School (1)
New Hampshire	3	Transfer from Other School (2), New Ag Ed BS/BA Graduate (1)
Rhode Island	2	Transfer from Other School (1), Unknown (1)
Vermont	1	From Agribusiness (1)
Total	18	Unknown (7), Transfer from Other School (5), New Ag Ed MS Graduates (2), New Ag Ed BS/BA Graduates (2), New Agriculture Graduate (1), From Agribusiness (1)

*No data available for Massachusetts

Teacher Preparation Programs

McLean and Camp (2000) surveyed department heads regarding the curricular structure of ten high quality pre-service agriculture teacher education programs in the United States. The organization of these programs varied greatly across the sample. All programs included coursework in agricultural subject areas and professional preparation. However, the required number of courses in each area differed. For instance, the number of agricultural education preparation courses offered ranged from three to nine, with the most common courses being Methods of Teaching Agriculture (n=9) and Program Planning in Agricultural Education (n=8). Two programs offered specific instruction on youth organizations; one

course focused specifically on the National FFA Organization and the other course covered several organizations. Three programs also offered specific instruction on Supervised Agricultural Experience (SAE). Half the programs had coursework on the foundations and philosophies of agricultural education. Only one university did not offer student teaching nor field experience in the teacher preparation program. The researchers identified 118 topics in the following curricular content areas: experiential components, foundations, program and curriculum planning, teaching methods, and teaching technology. These programs predominantly taught problem solving as the instructional method. Integration of academics into agricultural education was also an important topic in more than half of the surveyed programs. Recommendations from this study include investigation of other topics and competencies that should be included in agriculture teacher preparation programs, comparison of existing programs to national teacher licensure standards, and evaluation of skills, experiences and attitudes of pre-service agriculture teachers. Finally, all universities preparing agricultural educators should incorporate certain profession content into the required coursework in addition to personalizing their programs to address regional needs.

Harlin, Roberts, Dooley & Murphrey (2007) investigated the comprehensive set of knowledge, skills, and abilities necessary for teacher effectiveness. The purpose of this study was to identify the perceived competencies required of effective agriculture teachers both in and out of the classroom, and to recommend strategies for equipping pre-service teachers with such knowledge, skills, and abilities. Furthermore, a comparison of perceived competencies of pre-service and inservice teachers was conducted. Using focus groups, the researchers explored the question “How can we ensure that students leave teacher preparation

programs with a comprehensive set of knowledge, skills, and abilities necessary to be effective?” (p. 87). Data was analyzed using the constant comparison method and Bloom’s three domains of learning (cognitive, psychomotor, and affective) were used as the existing theoretical constructs for comparison and elaboration. A model was generated to display the identified competencies needed by agriculture teachers and recommended effective strategies for developing those competencies in pre-service teachers. These competencies and strategies are important in preparing agricultural educators for the diverse challenges of the profession, including the process of integrating science into the curriculum.

Thompson (1998) investigated the implications of integrating science into agricultural education by measuring agriscience teachers’ perceived impacts of integration on their programs. The findings indicated that integrating science improves student understanding of difficult science concepts by relating them to agriculture applications. In addition, agriscience teachers also believed that science integration recruits students to agricultural education programs, including a high number of gifted students. Lastly, improved program credibility was also a perceived benefit that helped agriscience programs gain local administrator, parental, community, and science teacher support. However, concerns included the lack of agriscience inservice workshops and courses for agriculture teachers, followed by the lack of science competence among teachers of agriculture. The need for an existing integrated science curriculum was also a significant barrier. As more emphasis is placed on the integration of academics into agricultural education, teachers will need more preparation and professional inservice focusing on both science content and integration strategies.

Teacher Quality

The literature on teacher quality is both extensive and diverse. The *No Child Left Behind* (NCLB) federal legislation requires “highly qualified” teachers in every classroom in every school (Elementary and Secondary Education Act, 2001). It is based on the idea that student achievement is directly impacted by teacher quality. Highly qualified teachers, as defined by NCLB, have a bachelor’s degree and state certification, and have demonstrated subject matter expertise in every core academic subject they teach. Thus, an extraordinary amount of research has been conducted investigating teacher quality, teaching experience, teacher certification, coursework, and performance on standardized assessments. In 2010, President Obama proposed a reauthorization of the Elementary and Secondary Education Act with revisions outlined in *A Blueprint for Reform* (United States Department of Education, 2010). The blueprint acknowledged that certification and subject matter expertise are not the only contributing factors to teacher quality and sought to set higher standards for teacher performance.

Graham and Garton (2003) investigated the agriculture teacher certification requirements and their ability to predict future teaching performance in University of Missouri graduates. These certification requirements included ACT examination, education GPA, agricultural education GPA, content area GPA, cumulative GPA, NTE Praxis – specialty area, and C-Base examination (English, Math, Social Science, and Written). Teaching performance was assessed by the administrative supervisor using the Performance Based Teaching Evaluation (PBTE) which evaluated instructional process, classroom management, interpersonal relationship, and professionalism. Teaching performance was

also assessed by the researcher using the Formative Assessment of Teaching instrument which evaluated the teacher's instructional progress based on eight stages of instruction and teaching performance based on effective teaching characteristics as determined by Rosenshine and Furst (1971). Agricultural education GPA was significantly correlated to teaching performance and explained 40% of the variance associated with teaching performance using the PBTE. However, none of the teacher certification measures was predictive of teacher performance using the Formative Assessment of Teaching.

Administrators were also interviewed in regard to their perceptions of necessary teaching characteristics. Their responses indicated that both cognitive and affective characteristics are important to teaching performance. Content knowledge and instructional methodology were identified as important cognitive characteristics. Yet, the affective characteristics of having a caring nature, being people-orientated, and exhibiting self-reflection were perceived as more important than cognitive ability by the administrators. The researchers suggested that current certification requirements are not effective in predicting future teaching performance and that current standards may be excluding potential agriculture teachers from the profession.

Muller and Miller (1993) compared the academic abilities of Iowa State University agricultural education graduates who enter and remain in the teaching profession for at least five years to those graduates who do not enter or leave the teaching profession. High school ranking, ACT test scores, and grade point averages were used to assess the academic ability of the graduates. The researchers found no significant differences in the academic abilities of graduates who entered the teaching profession and those who did not enter the teaching profession. Therefore, academic ability is not a determining factor in a student's decision to

teach. Rather, the researchers postulated that students are drawn to other occupations for greater extrinsic rewards, advancement opportunities, and greater compensation.

Teacher's Role in the Quality of Agricultural Education Programs

Quality agricultural education programs attract quality students. However, recruiting and retaining quality students is one of the major challenges in agricultural education.

Developing a strong agriculture teacher workforce is paramount in creating quality agricultural education programs that attract quality students from diverse backgrounds.

Myers, Breja, & Dyer (2004) used the nominal group technique to identify recruitment problems and solutions experienced by agriculture teachers in four states that had successfully recovered from declining enrollment. The number one issue that emerged from the data was teacher quality and commitment. Solutions to this problem focused on the need for higher quality teacher preparation through more effective preservice and inservice programs and professional development. Recruitment and certification of only quality individuals was also a key factor in improving overall teacher quality and commitment. Solutions to other issues, including program quality, agricultural education is equated to "farming," poor facilities, and teacher understanding of FFA and SAE, also focused on updating teacher preparation programs and improving preservice and inservice training, especially for beginning teachers. Furthermore, support and cooperation among administration, state staff, and teacher organizations were also emphasized as crucial to expanding agricultural education programming so that it is available to all students. The results of this study underscore the role of the teacher as the "key component of a successful program" and stress the importance of recruiting and preparing quality teachers. Support and

continued workforce development in areas of science-based curriculum, public relations, integration of SAE and FFA, recruitment of quality students, and documentation of program success are needed throughout teachers' careers.

SAE programs are an integral part of the agricultural education model; however the level of SAE participation varies widely by state (Dyer & Osborne, 1995). Through their synthesis of research on Supervised Agricultural Experience programs, Dyer and Osborne (1995) concluded that teacher attitudes and expectations strongly influenced SAE participation. In other words, teachers were perceived as the major reason for SAE program success or failure. Thus, the agriculture teacher played a key role in the success of all parts of the agricultural education program, including SAE.

In 1997, Steele surveyed agriculture teachers in New York to determine their perceived importance of SAE in their total program. Agriculture teachers viewed SAE as important (3.35 on a 5 point scale); however, SAE participation dropped 10% from 1983 to 1996, with only 29% of students participating in a SAE program. Barriers to quality SAE programs included low levels of summer employment, scheduling problems, rising transportation costs, and limited time for SAE supervision.

Wilson and Moore (2007) found similar trends among North Carolina agriculture teachers. SAE was viewed as important (8.46 on a 10 point scale) but the quality of the SAE programs were only perceived as 6.33. Only 30% of agriculture education programs had more than 75% SAE participation. Thus, there was a clear discrepancy between value of SAE and SAE program implementation. Roadblocks to quality SAE programs included record books, lack of time, no summer contract, less recognition for SAE than FFA, and lack of

knowledge about new SAE categories. The researchers recommended more inservice focused on improving the quality of SAE programs and stated that “teacher educators have a major responsibility in this area” (p.90). This study reiterated the important role agriculture teachers play in creating high quality agricultural education programs.

Problems Faced by Agriculture Teachers

One of the contributing factors in the shortage of qualified agriculture teachers is the high rate of teacher attrition. Many considerations influence a teacher’s decision to remain in the profession, including working conditions, administrative and collegial support, lack of involvement in decision making, and low salaries. In addition, research has shown a correlation between agricultural program quality and years of teaching experience (Straquadine, 1988). By addressing these problems, the agricultural education profession can retain more teachers and improve the overall number of quality agriculture teachers and the quality of agricultural education programs.

Myers, Dyer, and Washburn (2005) developed a “consensus listing of the major problems facing beginning agricultural education teachers” (p. 48) through a Delphi study of beginning agriculture teachers in Florida. Fifty items were identified as potential problems in round one; the most frequently cited problems involved behavior/classroom management, advising the FFA chapter, curriculum development and lesson planning, managing paperwork and finances, and working with parents, teachers, and administrators. After three rounds of data collection, consensus (>66% agreement) was reached on eleven identified problems: organizing an effective alumni chapter, organizing an effective advisory committee, organizing and planning FFA chapter events and activities, management of

student discipline in the classroom, recruiting and retaining alumni members, making ESE/special education accommodations, managing stress, balancing work and personal life, lack of preparation time at beginning of school year, time management, and developing a well-rounded program. Results of this study indicate that beginning agricultural teachers face a variety of different problems based on their specific programs. Thus, it is important to determine the problems facing beginning agriculture teachers in each state or region. In addition, these identified problems have implications for improvements in pre-service and inservice agriculture teacher programs and for cooperative efforts among university faculty, state staff, and professional teacher organizations.

Boone and Boone (2007) examined the problems faced by beginning and current agriculture teachers in West Virginia. Teachers were asked to list five problems they encountered as a beginning agriculture teacher and five problems they were currently confronting in the profession. Twenty-four categories emerged from the responses: administrative support, discipline, class preparations, time management, paperwork, facilities and equipment, community support, self-confidence, developing a course of instruction, budgets/funding, the reputation of the previous teachers, faculty relationships, undergraduate preparation, student motivation, guidance counselor issues, enrollment numbers, balancing school and home, university relations, special needs students, multi-teacher issues, mentorship, image of agricultural education, financial rewards, and changes in FFA and agriculture. Many of these problems were similar to those identified in other teaching disciplines; however, some of the issues faced by agriculture teachers were unique to the profession. The number one problem faced by both beginning and current agriculture

teachers was administrative support. Discipline and class preparations were also leading issues as identified by beginning agriculture teachers. Time management, paperwork, community support, budgets/funding, and facilities and equipment were major problems faced by both beginning and current agriculture teachers. Developing a course of instruction, self-confidence, undergraduate preparation, and mentorship were problems only identified by beginning agriculture teachers. However, all of the other categories were experienced to a varying degree by both beginning and veteran agriculture teachers alike. Administrators, university faculty, and state leaders should consider these problem areas when developing pre-service and inservice programs for the profession. Beginning and veteran agriculture teachers must be equipped with the knowledge and skills necessary to effectively handle potential problems as agriculture teachers. This will result in increased job satisfaction and increased agriculture teacher retention, creating a larger and higher quality agriculture teacher workforce.

A follow-up study by Boone and Boone (2009) used the identified problems to construct a questionnaire that asked respondents to evaluate the degree to which they perceived each item as a problem. The results were then analyzed for differences among genders, department size, and years of teaching experience. The only problem perceived by the teachers as moderate to strong was financial rewards. Time management, paperwork, and balancing school and home were perceived as slight to moderate problems for both beginning and current teachers. Beginning teachers also identified facilities-equipment, student motivation, and discipline as slight to moderate problems. When analyzed by gender, no differences in the severity of problems were found. However, differences did exist between

teachers who were employed in multi-teacher and single-teacher departments. Teachers who were part of a multi-teacher department viewed the problems of balancing school and home for both beginning and current teachers, and guidance counselor for current teachers, significantly higher. Teachers in programs with fifty students or fewer rated problems as significantly less severe than teachers in larger programs. Furthermore, when teachers were grouped by years of teaching experience, significant differences were found. Teachers with seven or fewer years of teaching experience perceived financial rewards, image of agricultural education, paperwork, and facilities-equipment as more severe than teachers with more years of experience. Thus, both teaching experience and department size impact the diversity of problems faced by agriculture teachers and, consequently, result in different inservice needs. The results of this study suggest an evaluation of teacher education programs, inservice opportunities, induction/first-year teacher programs, and state leadership in agricultural education to ensure that teachers are equipped with the necessary supports to handle these potential problems. By doing so, the profession can ensure a stronger workforce and decrease teacher attrition.

Rocca and Washburn (2008) examined pre-service agriculture teachers' perceptions of career barriers and support at 35 institutions throughout the nation. Career barriers included lack of job opportunities, family and relationship responsibilities, location, gender discrimination, lack of preparation, low self-confidence, lack of motivation, lack of support, and racial/ethnic discrimination. The majority of respondents (87.4%) perceived career barriers as low. Female respondents perceived career barriers slightly higher than male respondents. Teaching support included university professors, high school agriculture

teachers, cooperating teachers, parents, advisors, and friends. In addition, the majority of respondents (87.9%) perceived teaching support as high. Female respondents' perceived teaching support slightly lower than male respondents; however, these differences were not significant. The top barriers (mean > 2.0) for both females and males included no job opportunities in the area I want to live, family responsibilities, not willing to move away, being married or in a long-term relationship, and being prepared enough. Females' career barriers also included gender discrimination and not enough confidence in my teaching ability. The top teaching supports (mean > 4.4) for both females and males were their university teacher educator(s), high school agriculture teacher(s), and cooperating/mentor teacher(s). Males also perceived their mother and other high school agriculture teacher(s) as also being a top teaching support. These findings have important implications in regional teacher shortages, as location and family responsibilities are more likely to be career barriers than other factors. This is especially important for regions that do not have strong agricultural education programs. Recruiting agriculture teachers in these areas and providing them with a reliable teacher support system, especially when traditional agricultural education preparation programs do not exist, is necessary to ensure a supply of high-quality agriculture teachers.

Inservice Needs of Agriculture Teachers

In 1983, Barrick, Ladewig, and Hedges tested the Borich (1980) Needs Assessment Model for planning agriculture teacher inservice in Ohio. Data was collected on the perceived importance, knowledge, and application of specific technical agriculture topics by agriculture teachers. The information was then used to determine the relationships among the

three variables and determine the merit of using Borich's model. Both weighted knowledge scores and weighted application scores were calculated using the importance mean for each of the twelve topics. Friedman's Two-Way ANOVA was used to determine that eleven items were significantly different in their rankings. Kendall Tau Coefficients were then computed to determine the relationship between rankings of the topics and weighted scores. The correlations between importance scores and weighted scores were stronger than non-weighted scores; therefore, the Borich model was shown to be a valuable tool in assessing inservice needs. A combination of two or more perceived scores (knowledge, importance, ability) is key to providing an accurate needs assessment.

Garton and Chung (1997) further validated the use of the Borich Needs Assessment Model for identifying inservice needs of agriculture teachers. Their research showed that inservice needs identified using this method corresponded with the inservice needs identified by a quadrant analysis model.

Garton and Chung (1996) developed one of the cornerstone needs assessment instruments for assessing inservice needs of agriculture teachers. Their research, conducted with beginning agriculture teachers in Missouri, examined the perceived level of importance and competence for fifty professional competencies. Twelve of the competencies were determined to be high inservice needs and included competencies in the areas of instruction, program planning and evaluation, and program administration. Competencies within the technical agriculture category were of lowest inservice need. Priority needs included completing administrative reports, motivating students to learn, preparing FFA applications, public relations, integrating science and agriculture, utilizing an advisory committee,

developing and supervising students SAE programs, using computers in the classroom, teaching using experiments, and conducting local FFA activities. An interesting finding of this study was that the perceived inservice needs of beginning agriculture teachers differed from those ranked by their supervisors.

Joerger (2002) modified Garton and Chung's (1996) needs assessment instrument in order to assess two different cohorts of beginning agriculture teachers in Minnesota. Overall, the highest inservice needs were in the area of program design and management and teaching and classroom management. The lowest inservice needs were in the area of technical agriculture. Priority items included managing student behavior problems, motivating students to learn, preparing FFA applications, maintaining an advisory committee, evaluating the local program, and developing an effective public relations program. However, individual competency scores differed among the two different cohorts. The researcher recommended that assessments of agriculture teacher inservice needs be conducted with each new group of teachers, as inservice needs can change.

Layfield and Dubbins (2002) also modified Garton and Chung's (1996) needs assessment instrument in order to assess the inservice needs of beginning and experienced agriculture teachers in South Carolina. The priority inservice needs for beginning teachers included using utilizing a local advisory committee, developing local adult education programs, organizing FFA fundraisers, preparing for FFA contests, and developing student SAE programs. Many of the top inservice needs for beginning agriculture teachers in South Carolina aligned with previous results in Missouri (Garton & Chung, 1996) and Minnesota (Joerger, 2002). However, this study found that inservice needs differ between beginning and

experienced agriculture teachers. Priority inservice needs for experienced teachers included using computers and multimedia equipment in the classroom, preparing FFA applications, and teaching record keeping.

Research suggests that inservice needs also differ between traditionally certified teachers and alternatively certified teachers (Roberts & Dyer, 2004; Duncan & Ricketts, 2008). In addition, inservice needs differ by geographical region (Washburn et al., 2001). These two findings are especially pertinent to the New England agriculture teacher workforce due to the limited number of traditional preparation programs available and unique agricultural profile of the area. In addition, without university departments of agricultural education, the responsibility of identifying and providing valuable inservice training to agriculture teachers is left to other organizations that may or may not have the resources to meet all identified needs.

In Florida, Roberts and Dyer (2004) compared the self-perceived inservice needs of traditionally and alternatively certified agriculture teachers. Alternatively certified teachers were defined as those teachers “who earned their certification by other means [than by earning an undergraduate agricultural education degree] and applied directly to the state department of education for certification” (p. 59). Approximately half of the participants were traditionally certified and had similar years of teaching experience compared to traditionally certified participants. The instrument was divided into five inservice categories: FFA and SAE supervision, instruction and curriculum, technical agriculture, program management and planning, and teacher professional development. Overall, both groups of teachers had highest self-perceived inservice need in the area of professional development;

traditionally certified teachers had the lowest need in FFA and SAE supervision and alternatively certified teachers had the lowest need in instruction and curriculum. In every category, traditionally certified teachers rated their inservice needs higher than alternatively certified teachers. The highest ranked individual items for both groups included writing grant proposals for external funding, managing and reducing work-related stress, time management tips and techniques, advances in biotechnology, preparing proficiency award applications, changing the curriculum to meet changes in technology, building the image of agriculture programs and courses, recruiting and retaining quality students, and preparing for career development events. Alternatively certified teachers did have higher perceived inservice needs for supervising SAE programs, preparing FFA degree applications, organizing and maintaining an alumni association, advances in biotechnology, plant identification and use, restricted pesticide license training, managing learning labs, and planning and maintaining a school land lab. Several conclusions and implications were drawn from these findings. First, a large percentage of agriculture teachers are certified through alternative pathways even in a state with a strong agricultural education undergraduate program. Second, traditionally certified teachers have higher overall self-perceived inservice needs than alternatively certified teachers. Third, the highest inservice needs for both groups of teachers involved professional development focusing on work stress and time management. The researchers also cautioned drawing conclusions from the self-reported data, hypothesizing that “one explanation may be that alternatively certified teachers lack sufficient professional knowledge to accurately indicate their deficiencies” (p. 68). Thus, these findings propel the

need for additional research investigating the preparation and actual needs of alternatively certified agriculture teachers in different regions of the country.

Duncan and Ricketts (2008) also found differences in competency levels between traditionally and alternatively certified agriculture teachers in Georgia. Traditionally certified teachers perceived themselves to be more competent than alternatively certified teachers. Overall, traditionally certified teachers are most confident in their program management abilities and alternatively certified teachers are most confident in their pedagogical strategies. Both groups are least confident in their technical content knowledge, which directly contradicts previous research (Garton & Chung, 1996; Roberts & Dyer, 2004).

Duncan, Ricketts, Peake & Uessler (2006) used a revised version of Joerger's (2002) needs assessment instrument to discover the pre-service and inservice needs of Georgia agriculture teachers in three areas: technical agriculture, teaching and learning, and program management. Using mean weighted discrepancy scores, sixty-three items were evaluated for perceived importance and perceived competency to determine highest needs. The area of teaching and learning has the highest overall need (mean = 4.53 on a scale of 1 to 5) of motivating students to learn. Other needs in this area included teaching students to think critically and creatively, managing student behavior problems, and teaching learning disabled students. Program management had the largest number of "high need" items including providing college/career guidance to students, preparing FFA proficiency award and degree applications, developing an effective public relations program, developing SAE opportunities for students, using the local advisory committee, embedding graduation standards in the agriculture curriculum, utilizing a local alumni or young farmer affiliate, establishing and

organizing an agricultural co-op/internship, teaching record keeping skills, developing a variety of curriculum-based school-to-work activities, and providing career exploration in agriculture industries. Technical agriculture had the lowest discrepancy scores, indicating that this area was perceived as less important and/or that teachers were competent in these skills. One need that did arise in this area was integrating current advances in agriculture technology into the curriculum. These identified needs provide constructive data for pre-service and inservice programming for agriculture teachers, including the recommendations of focusing on current advances in agriculture, instructional techniques for integration, motivation, and critical thinking, agricultural communications coursework, and regional SAE idea databases.

Similar inservice needs assessments of agriculture teachers have been conducted in other states using the Borich (1980) Needs Assessment Model. Most recently, Sorensen, Tarpley, and Warnick (2010) investigated the inservice needs of all agriculture teachers in Utah. Their instrument contained 31 professional competencies based on previous studies and the Utah Applied Technology Skill Certificate Program objectives. Perceived importance and perceived ability levels were used to calculate mean weighted discrepancy scores and rank inservice needs. Information was also collected on teacher characteristics, program characteristics, and preferred method of inservice delivery. The majority of teachers were middle-aged, married males with a master's degree and were former FFA and/or 4-H members. The most commonly taught courses included agricultural biology, animal science, and welding. Agriculture class size ranged from nine to twenty-four students. Over eighty percent of the participants indicated that workshops were their preferred method of inservice

delivery, with video tape and distance education being the least preferred methods. Overall, teachers had average to high perceived ability and importance scores for all competencies. Thus, the mean weighed discrepancy scores were lower than previous studies (Duncan et al., 2006). However, similar needs were identified including utilizing the community in providing opportunities for students (i.e. advisory committees, ag organizations, etc.), developing SAE opportunities for all students, FFA proficiency award applications, student recruitment, teaching learning disabled students, maintaining SAE records, and classroom management/student discipline. Other needs included making repairs to equipment/tools and conducting safety inspections/correct hazardous conditions. The similarities found among different states suggest a possible national trend and recommendations for replication in other regions was advocated.

Summary

Agricultural teacher preparation programs in New England have undergone steady consolidation and elimination. It has been recommended that the responsibility of restructuring agricultural education in New England should be facilitated by the New England land grant universities. However, major barriers in agricultural education program growth include the lack of a unified system and poor leadership structure at the state and regional level. In addition, the profession is experiencing a shortage of qualified agriculture teachers. Several factors contribute to this shortage, including not enough newly qualified agriculture teachers being prepared, numerous graduates accepting employment outside the classroom, and a high rate of beginning teacher attrition. New agriculture teachers must be provided with specialized training to ensure high quality programs. Student achievement is

directly impacted by teacher quality; however, studies have shown that teacher certification requirements may not predict teaching performance. Enrollment trends in agricultural education have also been linked to teacher quality and commitment. Thus it is imperative that we develop a high quality agriculture teacher workforce especially in regions struggling to increase agricultural education enrollment. Agriculture teachers must be equipped with the knowledge and skills necessary to effectively handle potential problems in the profession. This will result in increased job satisfaction and increased teacher retention, creating a larger and higher quality agriculture teacher workforce. The Borich Needs Assessment Model has been shown to be an effective way to prioritize the inservice needs of agriculture teachers. This is especially important for beginning and alternatively certified agriculture teachers, as their inservice needs may be different from the rest of the profession.

Chapter 3: Methodology

Due to the unique nature of the New England agriculture teacher workforce, a region-wide descriptive study was deemed the most appropriate research design. Survey data were used to describe the background, preparation, and perceived inservice needs of current secondary agricultural educators in New England. Cross-sectional survey designs collect data at one point in time and are most suitable for examining current attitudes and/or practices, measuring current population needs, and evaluating current programming (Creswell, 2002, p. 377 - 379).

Population

The small size of this region made a census study feasible. The population for this study included all secondary agriculture teachers in the six New England states ($N=298$). The researcher compiled the frame for this study based on state and local teacher directories. The National FFA Local Program Success Specialist for the Northeastern United States provided a list of agricultural education contacts for each state who were then personally e-mailed by the researcher. Two state agricultural education or career and technical education directors, four state executive FFA directors, two agriculture teacher leaders, and two officers of state associations of agricultural educators were contacted as the leadership structure differed greatly in each state. Generated lists were cross-checked with the state department of education teacher directories when available to minimize frame error. In addition, the final teacher lists were cross-checked with individual school websites to ensure teaching responsibilities and contact information was accurate. Since this was a census study, sampling procedures were not employed. Two teachers opted out of the survey, two teachers

were on maternity leave, one teacher was serving as a paraprofessional, and five teachers were not currently teaching agriculture or had retired. Thus, the accessible population was $N = 288$, as shown in Table 3.

Table 3

Population of Secondary Agriculture Teachers in Six New England States

State	n	% Total Population
Connecticut	106	36.8
Maine	31	10.8
Massachusetts	76	26.4
New Hampshire	33	11.5
Rhode Island	11	3.8
Vermont	31	10.8
TOTAL	288	100.0

Instrumentation

An electronic version of the instrument was developed and administered using FluidSurveys®, an online survey software program. A second version of the instrument was adapted from FluidSurveys® using Microsoft Word and this paper questionnaire was administered through the US Postal Service in order to increase the survey’s response rate. The 56-item questionnaire had a mean completion time of 12.06 minutes, calculated by averaging the completion times of all participants in the study who completed the survey online as recorded by the software program. The instrument was divided into four sections

and items were developed by the researcher and from prior research identified in the literature review.

Section one contained items pertaining to teacher characteristics, including their agricultural and career background, teacher preparation and certification, and teaching experience. Participants were instructed to check all responses that applied to them and an “other” option was provided for participants to fill in additional responses. Participants were directed to a series of questions pertaining to whether they completed a traditional teacher preparation program, alternative licensure program, or no teacher preparation program at all. The number of items in section one ranged from 11 to 16, depending on the type of teacher preparation program.

Section two contained six items pertaining to the agricultural education program, including FFA and SAE participation and curriculum alignment. Participants were asked to estimate the percentage of their students who were involved in the FFA and who had an SAE program. Participants were asked to indicate how well their curriculum aligned to state and national standards using the choices “No Alignment”, “Some Alignment”, or “Extensive Alignment.” Identified standards in New England included Common Core State Standards (CCSS), a national initiative for common standards in English language arts and mathematics that have been formally adopted by all six New England states; States’ Career Cluster Initiative (SCCI) Knowledge and Skills, a national initiative for industry-validated expectations for career and technical education; Curriculum for Agricultural Science Education (CASE), a national curriculum that includes a series of courses for agricultural

education; and individual state academic standards or frameworks in math, language arts, science, and/or social studies.

Section three of the instrument contained 32 professional competencies adapted from previous needs assessment research (Garton & Chung, 1996; Joerger, 2002; Roberts & Dyer, 2004; Duncan et al., 2006; Sorensen, Tarpley & Warrick, 2010) along with the National Quality Program Standards for Secondary Agricultural Education (The National Council for Agricultural Education, 2009). This section measured the perceived inservice needs of New England agriculture teachers using the Borich Needs Assessment Model. The Borich Needs Assessment Model is designed to quantify perceived importance and competency levels for a variety of workforce skills in order to rank high need areas which can then be used for improving training programs (Borich, 1980). Participants were instructed to score each item in two ways: 1. The importance of each item to their agricultural education program, and 2. Their current level of competency (ability). The scales were based on definitions used by Joerger (2002) in order to maintain consistency in results. The importance scale was defined as: 1. Not Important or Not Utilized, 2. Low Importance, 3. Somewhat Important, 4. Important, 5. Very Important. The competency scale was defined as: 1. Not Competent, 2. Low Competency, 3. Somewhat Competent, 4. Competent, 5. Very Competent. The needs assessment was divided into three constructs: 1. Curriculum and Instruction (12 items), 2. Leadership and SAE Development (8 items), and 3. Program Planning and Professional Development (12 items).

Section four contained two open-ended items focusing on the future of agricultural education. Participants were instructed to list the top three challenges they face as an

agriculture teacher and the top three ways in which agricultural education can be strengthened in their state or region. A summary of respondents' comments can be found in Appendices G and H. A space was also provided for additional comments regarding the survey [Appendix I]. A copy of the instrument is provided in Appendix F.

Validity and Reliability

Content and face validity were established using a panel of experts in the agricultural education field. Content validity is the “degree to which the scores yielded by a test adequately represent the content, or conceptual domain, that these scores purport to measure” (Gall, Borg & Gall, 1996, p. 250). The panel of experts included three agricultural education faculty members from North Carolina State University, the National FFA Local Program Success Specialist for the Northeastern United States, the New Hampshire FFA Executive Director, the Vermont Career and Technical Education Program Coordinator, the New Jersey State Agricultural Education Program Leader, and two North Carolina agriculture teachers. The individuals were sent a link to the questionnaire and were asked to provide feedback on the clarity, completeness, and validity of the instrument. Based on their feedback, items were reworded and clarified, responses were added, and four curriculum integration items were added. The expert panel determined that the questions and responses were valid and the instrument met the purpose and objectives of the study.

The instrument was then pilot tested with 11 agriculture teachers in New Jersey. New Jersey was chosen for the pilot study because of its similar characteristics to New England states, including its small size and similar agricultural education certification program. The state agricultural education program leader solicited participation from agriculture teachers

and provided a list of names to the researcher. An invitation to take the online questionnaire was emailed to the group of participants, explaining the pilot test, informed consent, and test-retest protocol. Feedback from the pilot test was used to revise the instrument, clarify the questions, and ensure a completion time of less than fifteen minutes. The questionnaire was completed a second time by the pilot group to evaluate the stability of the instrument through test-retest reliability. Test-retest reliability “examines the extent to which scores from one sample are stable over time from one test administration to another” (Creswell, 2002, p.181). Seven participants completed the second questionnaire. The interval between testings averaged 19 days and ranged between 8 and 39 days.

The coefficient of stability, the correlation coefficient between individuals’ scores on the test and retest (Gall, Borg & Gall, 1996), was calculated using the Statistical Package for Social Sciences (SPSS) version 19. There was a significant correlation of 0.893 ($p = .007$) between scores on the test and retest, indicating a very strong, positive association (Davis, 1971). Therefore, the instrument was determined to be stable over time.

The internal consistency of the needs assessment portion of the pilot test was also evaluated using Cronbach’s Alpha. Internal consistency is “a measure of how consistently each item measures the same underlying construct” (Salkind, 2006, p.110). Cronbach’s alpha was calculated for each of the three needs assessment constructs using SPSS version 19. All portions of the needs assessment were found to be highly reliable. The Curriculum and Instruction scale consisted of 12 items ($\alpha = .928$), the Leadership and SAE Development scale consisted of 8 items ($\alpha = .924$), and the Program Planning and Professional Development scale consisted of 12 items ($\alpha = .912$). After collecting and analyzing the data

for the actual research study population, the reliability was recalculated and alpha scores of $\alpha = .898$, $\alpha = .934$, and $\alpha = .898$ were obtained, respectively.

Data Collection

Data were collected using Dillman's Tailored Design Method for mixed-mode surveys using both electronic and paper-based questionnaires (Dillman, Smyth, & Christian, 2009). Using alternative modes for a survey can improve response rates and decrease nonresponse error (Dillman, Smyth, & Christian, 2009, p. 302 - 310). State leaders were asked to inform their teachers of the upcoming research study and encourage their participation. A formal email invitation to participate in the study was sent to each identified secondary agriculture teacher in New England on May 13, 2011 [Appendix B]. The email provided information about the researcher, the purpose of the study, voluntary participation, informed consent and a link to the questionnaire. Each participant was sent an unique invite link to ensure that the data was only collected from the intended population. In addition, the invitation link was used to keep track of responses. Two \$50 Visa gift cards were used as an incentive to encourage teacher participation; all teachers who completed the questionnaire were entered into the drawing for a chance to win one of the gift cards.

Follow-up procedures were used to gain an improved response rate. Nonrespondents were sent a reminder email with the link to the questionnaire on June 1, 2011 and a second reminder email on June 13, 2011 [Appendix C]. A paper version of the questionnaire was mailed to all nonrespondents on June 17, 2011. Each personalized mailing included a handwritten envelope, a signed cover letter, informed consent form, and self-addressed return envelope with affixed stamp. Response rates for each phase of the data collection are shown

in Table 4. In total, 164 questionnaires were completed resulting in a response rate of 56.94%.

Table 4

Number of Responses by State and Data Collection Phase

State	Online Phase 1 (5/13 -5/31)	Online Phase 2 (6/1 – 6/12)	Online Phase 3 (6/13 – 6/27)	Mail Phase 4 (6/17 – 8/10)	Total	Response Rate
CT	20	16	13	10	59	55.7
MA	8	22	11	2	43	56.6
ME	4	2	2	6	14	45.2
NH	10	5	3	6	24	72.7
RI	2	1	1	2	6	54.6
VT	5	9	2	2	18	58.1
TOTAL	49	55	32	28	164	56.9

Early and late respondents were compared to monitor for nonresponse error. Early respondents (n = 104) were defined as the responses generated by the first two stimuli, including the electronic invitation and first reminder email. Late respondents (n = 60) were defined as the responses generated by the third and fourth stimuli, including the second reminder email and mailed questionnaire. The third and fourth stimuli were combined in order to meet the minimum number of late respondents for comparison, as suggested by Lindner, Murphy, and Briers (2001). Select questions were analyzed to determine if primary variables of interest differed significantly between early and late respondents. Chi Square tests of homogeneity were calculated for questions related to teacher preparation program,

length of contract, FFA advisor status, teaching state, content area, and licensure. An alpha of 0.05 was established *a priori*. When comparing the two independent groups, no statistically significant differences were found for these variables, as shown in Table 5.

Table 5

Chi Square Tests for Homogeneity Comparing Early (n = 104) vs. Late (n = 60) Respondents

Variable	X ²	Sig. (p < 0.050)
State	5.52	0.356
Teacher Preparation Program	1.28	0.734
Preparation Content Area	1.50	0.472
Alternative Licensure Path	7.79	0.051
Educator License	5.62	0.229
Contract Length	6.00	0.111
FFA Advisor	0.30	0.587

Note. p < 0.050

Mann Whitney U tests were calculated and no significant differences existed for questions related to FFA participation (p = .509), SAE participation (p = .284) and years of agricultural industry experience (p = .445). Early respondents (M = 13.76, SD = 9.71) and late respondents (M = 12.20, SD = 8.99) did not differ significantly on years of agricultural education teaching experience, t = 1.012, p = 0.313; nor did early respondents (M = 15.46, SD = 10.58) differ from late respondents (M = 15.13, SD = 10.47) on total years of teaching experience, t = .191, p = .849. Weighted discrepancy scores for all 32 needs assessment items were also compared for early and late respondents using the Mann-Whitney U test for

independent samples, a nonparametric alternative to the independent sample t-test for ordinal dependent variables (Hays, 1973, p. 778 – 780; Norusis, 2008, p. 396-397). No statistically significant differences were found.

Since there were no significant differences between early and late respondents, the respondents were considered to be representative of the entire population. This approach to controlling non-response error was chosen based on nonresponse techniques suggested by Miller and Smith (1983) and Lindner, Murphy, and Briers (2001).

Analysis of Data

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 19. Descriptive statistics were used to describe the overall responses of the instrument for the whole region and on a state-by-state basis. Descriptive parameters were run to compare frequencies and percentages for objective one, “describe the agricultural and educational backgrounds of agriculture teachers in New England,” objective two, “describe the teaching preparation and certification of agriculture teachers in New England,” and objective three, “describe key program characteristics of agricultural education programs in New England, including FFA participation, SAE participation, and curriculum alignment.” For objective four, “determine New England agriculture teachers’ perceived importance and competence within the curriculum and instruction, leadership and SAE development, and program planning and professional development constructs of quality agricultural education program standards”, the mean and standard deviation were calculated for each of the 32 competencies.

Mean weighted discrepancy scores (MWDS) were calculated for objective five, “determine and prioritize the inservice needs of New England agriculture teachers using the Borich Needs Assessment Model.” This procedure for identifying inservice needs using a discrepancy analysis between “what is” and “what should be” was developed by Borich (1980) and later described by Garton and Chung (1996). A discrepancy score was calculated for each competency by taking each participant’s importance rating minus the ability (competence) rating. A weighted discrepancy score was then calculated for each competency by multiplying the participant’s discrepancy score by the mean importance rating. Finally, a mean weighted discrepancy score was calculated for each competency by averaging the weighted discrepancy scores (sum of the participants weighted discrepancy scores divided by the number of responses). The mean weighted discrepancy scores were then used to rank each of the 32 competencies according to the perceived inservice need; the higher the mean weighted discrepancy score, the higher the inservice need.

Inferential statistics were used to analyze the final objective, “compare the inservice needs of traditionally and alternatively certified agriculture teachers.” The Mann-Whitney U Test for independent samples was used to identify differences between perceived inservice needs of traditionally and alternatively certified agriculture teachers based on weighted discrepancy scores. This test was also used to identify differences between beginning and experienced agricultural teachers. For this study, beginning teachers were defined as teachers with five or less years of agricultural education experience; experienced teachers were defined as teachers with more than five years of agricultural education experience.

Chapter 4: Findings

The purpose of this descriptive study was to describe the background, preparation, and perceived inservice needs of current secondary agricultural educators in New England. The population for this study included all employed agriculture teachers in the six New England states (N = 288) during the 2010 – 2011 school year. The researcher compiled the frame for this study based on state and local teacher directories. Data were collected using Dillman's Tailored Design Method for mixed-mode surveys using both electronic and paper-based questionnaires (Dillman, Smyth, & Christian, 2009). A total of 164 questionnaires were completed resulting in a response rate of 56.94%.

Findings Related to Objective One: Describe the agricultural and educational backgrounds of agriculture teachers in New England.

The majority (76.8%) of respondents had worked in the agricultural industry prior to becoming an agriculture teacher. Fifty-four respondents (32.9%) had grown up on a farm or other family-owned agricultural business. In addition, approximately a third of respondents had been involved in some sort of agricultural program as a youth, including FFA (33.5%), 4-H (36.0%), and/or agricultural education in middle/high school (37.2%). Other responses included studying agriculture in college and having agricultural hobbies or interests. Only 3% of respondents indicated that they did not have any of these agricultural experiences prior to teaching agricultural education. The backgrounds of the respondents are summarized in Table 6.

Table 6

Agricultural and Career Backgrounds of Respondents (N=164)

Characteristic	n	%
Worked in the agricultural industry prior to teaching	126	76.8
Enrolled in agricultural education in middle/high school	61	37.2
Involved in 4-H as a youth	59	36.0
Involved in FFA as a youth	55	33.5
Grew up on a farm or family-owned agricultural business	54	32.9
Taught different subject area before teaching agriculture	28	17.1
Other	21	12.8
None of the above	5	3.0

When asked about their experience in the agricultural industry, the majority (65.0%) of respondents had five or more years of work experience, as shown in Table 7. Only 2.5% of respondents reported that they had no work experience in the agricultural industry.

All degrees held by respondents are shown in Table 8. Almost all (97.6%) of the respondents had completed a bachelor's degree, over half (55.0%) of which were in an agricultural field. The majority (64.0%) of respondents also completed a master's degree; however, most (66.6%) of the master's degrees were in the field of education and only 9.5% were in an agricultural field. Eleven teachers also reported having a sixth-year certificate and one teacher held a Ph.D. in an agricultural field. Some teachers also included industry certifications and additional work experience under the "other" category.

Table 7

Agricultural Industry Work Experience of Respondents (N=163)

Experience	n	%
More than 5 years	106	65.0
3 – 5 years	27	16.6
1 – 3 years	22	13.5
Less than 12 months	4	2.5
None	4	2.5

Table 8

Educational Degrees Obtained by Respondents Shown by Major (N =164)

Degree	Education		Agriculture		Other		Total	
	n	%	n	%	n	%	n	%
Trade School Diploma	-	-	-	-	-	-	9	5.5
Associate	1	0.6	37	22.6	19	11.6	57	34.8
Bachelor	39	23.8	88	53.7	33	20.1	160	97.6
Masters	70	42.7	10	6.1	25	15.2	105	64.0
Other	-	-	-	-	-	-	24	14.6

Findings Related to Objective Two: Describe the teaching preparation and certification of agriculture teachers in New England.

The majority (n = 109, 66.9%) of respondents completed a traditional teacher preparation program, as shown in Table 9. Forty-eight teachers (29.4%) had already

completed or were currently completing an alternative licensure program. Only six teachers (3.7%) did not complete any type of teacher preparation program.

Table 9

Teacher Preparation Programs of Respondents (N = 163)

	n	%
Completed Traditional Program	109	66.9
Completed Alternative Licensure Program	37	22.7
Currently Completing Alternative Licensure Program	11	6.7
No Preparation Program Completed	6	3.7

Of the respondents who completed a traditional teacher preparation program, the majority (n = 73, 67.6%) completed a program in agricultural education. Twenty teachers (18.5%) completed a teacher preparation program in science. Other subject areas reported included adult and occupational education, mathematics, English, health, family and consumer science, industrial arts, special education, middle school, and social studies.

Teachers received bachelor's degrees (n=43, 39.8%), integrated bachelor's/master's degrees (n = 9, 8.3%), and master's degrees (n = 34, 31.5%) upon completion of their traditional teacher preparation program. However, twenty-two teachers (20.4%) reported that their preparation program was a professional program in which they obtained their teaching license only. These programs are for students who have completed a bachelor's degree and wish to be certified as a teacher or earn an additional licensure. They are often referred to as

Post-Baccalaureate Teacher Licensure Programs or Teacher Certification Programs for College Graduates.

Most (n=94, 87.0%) of the traditional teacher preparation programs were administered on-campus, with only 5.6% (n=6) through distance education and 6.5% (n=7) through hybrid (both distance education and on-campus) components. The University of Connecticut (n=25, 23.2%) and the University of Massachusetts (n=21, 19.4%) were the most frequently attended universities. Respondents also attended several other land-grant universities, including University of New Hampshire (n=11, 10.2%), Cornell University (n=5, 4.6%), University of Rhode Island (n=4, 3.7%), University of Vermont (n=4, 3.7%), University of Maine (n=4, 3.7%), and University of Georgia (n=3, 2.8%). The majority of teachers obtained their teaching degrees from colleges within the New England states (n = 90, 83.3%) or New York (n = 7, 6.5%). The characteristics of traditional teacher preparation programs completed by respondents are summarized in Table 10.

For those respondents who completed/are completing an alternative licensure program, the majority (n =25, 52.1%) of programs were through a college or university. Twenty-one teachers (43.8%) obtained their license through a state department of education program. Only two teachers (4.17%) completed an alternative licensure program solely through a local school district/on-the-job training.

Table 10

Traditional Teacher Preparation Program Characteristics

Characteristic	n	%
Content Area	108	
Agricultural Education	73	67.6
Science Education	20	18.5
Other Subject Area	15	13.9
Degree	108	
Bachelor	43	39.8
Integrated Bachelor/Master	9	8.3
Master	34	31.5
Other	22	20.4
Location	108	
On-Campus	94	87.0
Distance Education	6	5.6
Hybrid (both on-campus & distance ed components)	7	6.5
Other	1	0.9
Institution	108	
New England Land Grant University	69	63.9
New England College/University (non-land grant)	20	18.5
Other Land Grant University	12	11.1
Other College/University (non-land grant)	7	6.5

Of these alternative licensure programs, the majority (n=26, 54.2%) of the coursework and training was delivered on-site. Fourteen programs (29.2%) were hybrid, utilizing both distance education and on-site coursework/training, and six programs (12.5%) were delivered solely through distance education. One teacher (2.1%) indicated that no coursework was required for the alternative licensure program.

Coursework for alternative licensure was taken at a variety of colleges and universities, all located in the New England states. The most frequently reported schools included University of Massachusetts (n=7, 22.7%), Vermont Technical College (n=5, 16.1%), and White Mountains Community College (n=3, 9.7%). The characteristics of alternative licensure programs completed by the respondents are summarized in Table 11.

Respondents who completed/are completing an alternative licensure program were asked to rate the relevance of the required coursework and training to their career as an agriculture teacher, as shown in Table 12. On a scale of 1 (completely irrelevant) to 5 (extremely relevant), the coursework was perceived as somewhat relevant (M=3.38, SD=1.06). More than half of the respondents (52.1%, n=25) perceived the coursework as relevant or extremely relevant to their career, while 31.3% (n=15) perceived the coursework as somewhat relevant. A small number of respondents (4.8%, n=8) found little or no relevance between the coursework and their careers.

Table 11

Alternative Licensure Program Characteristics

Characteristic	n	%
Program Administrator	48	
Through a college or university	25	52.1
Through the State Department of Education	21	43.8
Through a local school district/on-the-job training	2	4.2
Location	48	
On-Campus	26	54.2
Distance Education	6	12.5
Hybrid (both on-campus & distance ed components)	14	29.2
Other (off-site program)	1	2.1
Institution	31	
New England Land Grant University	13	41.9
New England College/University (non-land grant)	18	58.1

Respondents were also asked to rate the ease in which they were able to locate and complete the required courses/training for alternative licensure. On a scale of 1 (very difficult) to 5 (very easy), the coursework was perceived as neither easy nor difficult to fulfill ($M=3.40$, $SD=1.11$). Forty-eight percent ($n=23$) of respondents perceived the coursework as easy or very easy to locate and complete, while 33.3% ($n=16$) perceived the coursework as neither easy nor difficult to fulfill. Almost nineteen percent ($n=9$) of respondents found it

difficult or very difficult to locate and complete the required courses/training for alternative licensure.

Table 12

Perceived Relevance and Ease of Alternative Licensure Requirements

	M	SD	n	%
Relevance of requirements to career	3.38	1.06	48	100.0
Completely irrelevant (1)			4	8.3
Not very relevant (2)			4	8.3
Somewhat relevant (3)			15	31.3
Relevant (4)			20	41.7
Extremely relevant (5)			5	10.4
Ease of locating and completing requirements	3.40	1.11	48	100.0
Very Difficult (1)			3	6.3
Difficult (2)			6	12.5
Neither Easy nor Difficult (3)			16	33.3
Easy (4)			15	31.3
Very Easy (5)			8	16.7

Of the 160 teachers who reported their license in agricultural education, the majority (75.0%) held a professional (highest level) license in their field. Only 5.6% of respondents did not currently hold a valid teaching license. Of the 159 respondents who reported their teaching endorsement areas, the majority (87.4%) held an agricultural education endorsement in either general agriculture or a specialized agricultural area. Forty-one respondents (25.8%)

held a science education endorsement, with 24 of these teachers being certified in both science and agriculture. Seventeen respondents (10.7%) held an administrative endorsement, with 15 of these teachers being certified in both agriculture and administration. Only five respondents (3.1%) indicated that they did not hold any teaching endorsements.

The majority (56.8%) of respondents had a standard 10-month teaching contract; however, many respondents (41.6%) had some type of extended contract for summer work. Two teachers reported that they did not have a teaching contract, but rather were outside consultants for the school's agricultural education program. The majority ($n = 114$, 70.4%) of respondents indicated that they currently served as the FFA advisor; 29.6% ($n=48$) were not currently an FFA advisor. The respondents' teaching license, contract, and advisor status are summarized in Table 13.

Years of teaching experience in agricultural education averaged 13.19 years ($SD = 9.46$) for respondents. The most novice teacher had 0 years of agriculture teaching experience and the most experienced teachers ($n=2$) had 45 years. Respondents averaged 15.34 years ($SD = 10.51$) of teaching experience in total (agricultural education and other subject areas). The most novice teacher had 0 years of total teaching experience and the most experienced teacher had 48 years.

Table 14 shows how prepared respondents felt to teach agricultural education when they entered the profession. The majority of teachers felt they were prepared ($M=3.52$, $SD = 1.06$). 53.7% of respondents felt prepared or very prepared and 30.2% of respondents felt they were somewhat prepared. Only 16.0% of respondents felt that they were unprepared or very unprepared on their first day of teaching.

Table 13

Teaching License, Contract, and Advisor Status of Respondents

	n	%
Agricultural Education Teaching License	160	
Professional License	118	73.4
Initial/Provisional License	29	18.1
Temporary License	4	2.5
No License	4	2.5
Reported Teaching Endorsement Areas ^a	159	
Agricultural Education	139	87.4
Science Education	41	25.8
Administration	17	10.7
Other Career & Technical Education Subject	9	5.7
Other Academic Area	7	4.4
None	5	3.1
Length of Contract	161	
10 Month	92	57.1
Extended (for limited summer work)	42	26.1
12 Month	25	15.5
Other	2	1.2
Currently an FFA Advisor	162	
Yes	114	70.4
No	48	29.6

^a Many teachers (n=68, 42.8%) reported more than one endorsement area.

Table 14

Perceived Preparedness of Respondents to Teach Agricultural Education

	M	SD	n	%
Prepared to teach agricultural education	3.52	1.06	162	100.0
Very Prepared (5)			30	18.3
Prepared (4)			57	35.2
Somewhat prepared (3)			49	30.2
Unprepared (2)			19	11.7
Very Unprepared (1)			7	4.3

The majority (91.1%) of respondents belonged to one or more professional organizations, as shown in Table 15. Over half the respondents belonged to their state agriculture teacher association (59.8%), the National Association of Agricultural Educators (54.3%), and their state education association (51.2%) association. Twelve teachers (7.3%) were members of the regional agricultural education association, New England Agriculture Teachers Association (NEAT). Only 4.3% were members of the Association for Career and Technical Education. Other professional organizations reported by teachers included the National Science Teachers Association (n=5), marine educator associations (n=4), and other technical agricultural organizations.

Table 15

Professional Organization Memberships of Respondents (N = 164)

	n	%
State Agriculture Teachers' Association	98	59.8
National Association of Agricultural Educators (NAAE)	89	54.3
State Teacher's Association (General Education)	84	51.2
National Education Association (NEA)	73	44.5
State FFA Alumni Association	28	17.1
State Career & Technical Education Association	15	9.1
New England Agriculture Teachers Association (NEAT)	12	7.3
Association for Career & Technical Education (ACTE)	7	4.3
Other	22	13.4
None	13	7.9

Findings Related to Objective 3: Describe key program characteristics of agricultural education programs in New England, including FFA participation, SAE participation, and curriculum alignment.

Over half (59.3%) of the respondents reported that all of their students were members of the National FFA Organization. Only 5.6% of respondents reported that none of their students were members of the National FFA Organization. However, a much smaller number of respondents (25.3%) reported that all of their students had a supervised agricultural experience (SAE) program. Some respondents (14.8%) reported that none of their students

had an SAE program. The level of student participation in the FFA and SAE programs are shown in Table 16.

Table 16

FFA and SAE Participation in Respondents' Programs (N = 162)

Student Participation	<u>FFA</u>		<u>SAE</u>	
	n	%	n	%
100%	96	59.3	41	25.3
75% - 99%	18	11.1	23	14.2
50% - 74%	13	8.0	5	3.1
25% - 49%	11	6.8	34	21.0
1% - 24%	15	9.3	35	21.6
None	9	5.6	24	14.8

Overall, respondents indicated that their agriculture curriculum had at least some alignment with national standards, as shown in Table 17. The highest number of respondents (86.7%) reported alignment with the Common Core State Standards (CCSS). A high number of respondents (80.4%) also reported alignment with National or State Academic Standards. The majority of respondents (69.8%) aligned their agriculture curriculum with States' Career Cluster Initiative (SCCI) Knowledge and Skills. The Curriculum for Agricultural Science Education (CASE) standards had the lowest (51.6%) reported alignment.

Table 17

Curriculum Alignment in Respondents' Programs (N = 158)

	<u>CASE</u>		<u>CCSS</u>		<u>SCCI</u>		<u>Academic</u>	
	n	%	n	%	n	%	n	%
Extensive Alignment	11	7.1	69	43.7	40	25.6	45	28.5
Some Alignment	69	44.5	68	43.0	69	44.2	82	51.9
No Alignment	75	48.4	21	13.3	47	30.1	31	19.6

Note. CASE = Curriculum for Agricultural Science Education; CCSS = Common Core State Standards; SCCI = States' Career Cluster Initiative; Academic = National or State Academic Standards.

Findings Related to Objective 4: Determine New England agriculture teachers' perceived importance and competence within the curriculum and instruction, leadership and SAE development, and program planning and professional development constructs of quality agricultural education program standards.

The goal of objective 4 was to determine each respondent's perceived level of importance and ability for 32 professional competencies. This information was necessary to determine the mean weighted discrepancy score (MWDS) and rank of each competency in order to prioritize inservice needs of New England agriculture teachers.

Respondents indicated that in the area of curriculum and instruction, the most important competencies were: 1) using effective classroom management, 2) motivating students to learn, and 3) using effective teaching strategies. All items in this category were deemed important to very important. Respondents reported that they were most competent at: 1) teaching in the shop, greenhouse, and other lab settings, 2) using effective classroom

management, and 3) using effective teaching strategies. Respondents felt that they were only somewhat competent to competent at teaching students with special needs and using technology in instruction. Respondents reported themselves competent to very competent for all other items in this category. The means and standard deviations for the 12 curriculum and instruction items are shown in Table 18.

Table 18

Importance and Competency Scores of Curriculum and Instruction Category

Item	<u>Importance</u>		<u>Competency</u>	
	M	SD	M	SD
Using effective classroom management	4.85	.39	4.33	.71
Motivating students to learn	4.81	.44	4.29	.63
Using effective teaching strategies	4.79	.46	4.31	.62
Teaching in the shop, greenhouse, and other lab settings	4.76	.59	4.46	.60
Teaching students to think critically and creatively	4.75	.47	4.24	.68
Keeping curriculum current with advances in ag tech.	4.62	.60	4.02	.72
Using a variety of methods to assess student learning	4.60	.56	4.22	.70
Integrating science and agriculture	4.56	.56	4.18	.72
Teaching students with special needs	4.48	.67	3.93	.86
Incorporating academic standards into the curriculum	4.34	.69	4.10	.78
Creating unit and lesson plans	4.31	.86	4.22	.68
Using computer technology in instruction	4.21	.71	3.95	.79

Note. 1 = Not important/competent, 2 = Low importance/competency, 3 = Somewhat important/competent, 4 = Important/Competent, 5 = Very important/competent.

Respondents indicated that in the area of leadership and SAE development, the most important competencies were: 1) teaching leadership, 2) teaching record-keeping skills, and 3) conducting local FFA chapter activities. All other items in this category were deemed somewhat important to important. Respondents reported that they were most competent at: 1) teaching leadership, 2) teaching record-keeping skills, and 3) preparing students for agriculture/FFA contests. Respondents reported themselves somewhat competent to competent for all other items in this category. There was also a larger standard deviation for the items in this category when compared to the curriculum and instruction category. The means and standard deviations for the 8 leadership and SAE development items are shown in Table 19.

Respondents indicated that in the area of program planning and professional development, the most important competencies were: 1) building a positive image of the agriculture program, 2) managing classroom and laboratory facilities, and 3) developing my technical agriculture knowledge/skills. Organizing and maintaining an alumni association, writing grant proposals for external funding, and creating a professional development plan were only deemed somewhat important to important. All other items in this category were deemed important to very important. Respondents reported that they were most competent at: 1) building a positive image of the agriculture program, 2) managing classroom and laboratory facilities, and 3) developing school and community partnerships. Respondents also felt that they were competent to very competent at designing an agriculture program that meets community needs and developing their technical agriculture knowledge and skills. However, respondents felt that they had low ability at writing grant proposals and organizing

and maintaining an alumni association. Respondents reported themselves somewhat competent to competent for the remaining five items in this category. The means and standard deviations for the 12 program planning and professional development items are shown in Table 20.

Table 19

Importance and Competency Scores of Leadership and SAE Development Category

Item	<u>Importance</u>		<u>Competency</u>	
	M	SD	M	SD
Teaching leadership	4.35	.80	4.21	.75
Teaching record-keeping skills	4.11	.99	3.87	.88
Conducting local FFA chapter activities	3.99	1.16	3.76	1.24
Develop SAE opportunities for all students	3.94	1.10	3.51	1.16
Supervising students' SAE programs	3.94	1.19	3.63	1.20
Preparing students for agriculture/FFA contests	3.93	1.08	3.85	1.07
Training FFA chapter officers	3.91	1.23	3.49	1.22
Preparing FFA award applications	3.49	1.21	3.22	1.20

Note. 1 = Not important/competent, 2 = Low importance/competency, 3 = Somewhat important/competent, 4 = Important/Competent, 5 = Very important/competent.

Across all three constructs, respondents reported that curriculum and instruction was the most important category and the category in which they were most competent, as shown in Table 21. Leadership and SAE development had the lowest importance and competency scores of the three quality program constructs. Furthermore, respondents agreed the most in their opinions in the area of curriculum and instruction and differed the most in the area of

leadership and SAE development, as determined by the calculated standard deviations for average scores.

Table 20

Importance and Competency Scores of Program Planning/Professional Development Category

Item	<u>Importance</u>		<u>Competency</u>	
	M	SD	M	SD
Building a positive image of the agriculture program	4.77	.52	4.32	.75
Managing classroom and laboratory facilities	4.58	.71	4.29	.69
Developing my technical agriculture knowledge/skills	4.56	.65	4.01	.68
Recruiting and retaining high quality students	4.53	.66	3.95	.84
Designing an Ag program that meets community needs	4.45	.74	4.02	.86
Developing school and community partnerships	4.45	.78	4.03	.93
Working with a local advisory committee	4.23	.98	3.84	1.06
Evaluating the local agriculture program	4.23	.84	3.78	1.00
Managing and reducing work-related stress	4.23	1.03	3.39	1.05
Writing grant proposals for external funding	3.97	1.09	2.83	1.25
Creating a professional development plan	3.97	.99	3.59	1.14
Organizing and maintaining an alumni association	3.43	1.31	2.71	1.19

Note. 1 = Not important/competent, 2 = Low importance/competency, 3 = Somewhat important/competent, 4 = Important/Competent, 5 = Very important/competent.

Table 21

Sum Scores for Perceived Importance and Competence

Category	<u>Items</u>	<u>Sum Score</u>		<u>Average Score</u>	
	N	M	SD	M	SD
Curriculum & Instruction					
Importance	12	54.92	4.42	4.59	.36
Competence	12	50.17	5.48	4.19	.46
Leadership & SAE Development					
Importance	8	31.65	6.99	3.96	.87
Competence	8	29.54	6.58	3.69	.82
Program Planning & Prof. Development					
Importance	12	51.22	6.75	4.28	.56
Competence	12	44.58	7.43	3.73	.62

Findings Related to Objective 5: Determine and prioritize the inservice needs of New England agriculture teachers using the Borich Needs Assessment Model.

The goal of objective 5 was to calculate a Mean Weighted Discrepancy Score (MWDS) for each competency in order to rank the inservice priorities of respondents using the Borich Needs Assessment Model. The competency “Writing grant proposals for external funding” was the top inservice priority (MWDS = 4.49); it was the only competency to have a MWDS over 4. “Managing and reducing work-related stress” was also a high inservice need (MWDS = 3.56). All other competencies had MWDS less than 3. Other inservice

priorities included: Keeping current with advances in agricultural technology (MWDS = 2.75), Recruiting and retaining high quality students, including nontraditional students (MWDS = 2.64), Using effective classroom management (MWDS = 2.54), Motivating students to learn (MWDS = 2.53), and Developing my technical agriculture knowledge/skills (MWDS = 2.52). Table 22 shows the ranked inservice needs of respondents based on MWDS. The categories of “curriculum and instruction” and “program planning and professional development” each contained five of the top ten inservice needs. The category of leadership and SAE development had the lowest overall inservice needs.

Table 23 displays the average MWDS for each of the three categories in the needs assessment. Overall, leadership and SAE development had the lowest inservice need (MWDS = 1.04) and smallest variance (SD = .47) among individual item scores. The program planning and professional development category had the highest average inservice need (MWDS = 2.33) but also had the most variance (SD = .91) among individual item scores.

Table 22

Inservice Priorities of Respondents based on MWDS

Item	Rank	MWDS
Writing grant proposals for external funding ^c	1	4.49
Managing and reducing work-related stress ^c	2	3.56
Keeping curriculum current with advances in ag technology ^a	3	2.75
Recruiting and retaining high quality students ^c	4	2.64
Using effective classroom management ^a	5	2.54
Motivating students to learn ^a	6	2.53
Developing my technical agriculture knowledge/skills ^c	7	2.52
Teaching students with special needs ^a	8	2.47
Organizing and maintaining an alumni association ^c	9	2.43
Teaching students to think critically and creatively ^a	10	2.42
Using effective teaching strategies ^a	11	2.30
Building a positive image of the agriculture program ^c	12	2.17
Designing an Ag program that meets community needs ^c	13	1.92
Evaluating the local agriculture program ^c	14	1.90
Developing school and community partnerships ^c	15	1.83
Integrating science and agriculture ^a	16	1.72
Using a variety of methods to assess student learning ^a	17	1.71
Develop SAE opportunities for all students ^b	18	1.70
Working with a local advisory committee ^c	19	1.68

(continued)

Table 22 (continued)

Item	Rank	MWDS
Training FFA chapter officers ^b	20	1.61
Creating a professional development plan ^c	21	1.52
Teaching in the shop, greenhouse, and other lab settings ^a	22	1.42
Managing classroom and laboratory facilities ^c	23	1.29
Supervising students' SAE programs ^b	24	1.22
Incorporating academic standards into the curriculum ^a	25	1.06
Using computer technology in instruction ^a	26	1.06
Teaching record-keeping skills ^b	27	0.98
Preparing FFA award applications ^b	28	0.93
Conducting local FFA chapter activities ^b	29	0.93
Teaching leadership ^b	30	0.60
Creating unit and lesson plans ^a	31	0.39
Preparing students for agriculture/FFA contests ^b	32	0.32

Note. MWDS = Mean Weighted Discrepancy Score

^aCurriculum and Instruction Category. ^bLeadership and SAE Development Category.

^cProgram Planning and Professional Development Category.

Table 23

Average MWDS of Three Needs Assessment Categories

Category	n	Sum	M	SD
Curriculum & Instruction	12	22.36	1.86	.76
Leadership & SAE Development	8	8.30	1.04	.47
Program Planning & Professional Development	12	27.93	2.33	.91

Note. MWDS = Mean Weighted Discrepancy Score.

Findings Related to Objective 6: Compare the inservice needs of agriculture teachers based on their preparation program and years of agricultural education teaching experience.

Inferential statistics were used to determine if differences existed in the ranking of inservice needs for traditionally versus alternatively certified agriculture teachers. Weighted discrepancy scores were compared using the Mann-Whitney U Test for independent samples, a nonparametric alternative to the independent sample t-test for ordinal dependent variables (Hays, 1973; Norusis, 2008). An alpha of 0.05 was established *a priori*. Alternatively certified teachers were found to have significantly higher weighted discrepancy scores than traditionally certified teachers for 4 of the 32 competencies. These items included: 1) Using effective classroom management, 2) Using effective teaching strategies, 3) Motivating students to learn, and 4) Creating a professional development plan. Three of these competencies were part of the curriculum and instruction category. Statistically significant differences are reported in Table 24.

Table 24

Differences in WDS of Traditionally (n = 100) vs. Alternatively (n = 40) Certified Agriculture Teachers

Competency	<u>Traditional</u>		<u>Alternative</u>		<u>Sig.</u>
	M	SD	M	SD	(p < .05)
Using effective classroom management. ^a	1.99	2.68	3.94	3.76	.002
Using effective teaching strategies. ^a	1.80	2.86	3.77	3.09	.001
Motivating students to learn. ^a	1.97	3.88	3.44	3.24	.043
Creating a professional development plan. ^c	1.03	3.76	2.64	5.29	.014

Note. WDS = Weighted Discrepancy Score. p < 0.05

^aCurriculum and Instruction Category. ^cProgram Planning/Professional Development Category.

Weighted discrepancy scores were also compared for beginning versus experienced teachers using the Mann-Whitney U Test for independent samples. Beginning teachers were defined as teachers with five or less years of agricultural education experience; experienced teachers were defined as teachers with more than five years of agricultural education teaching experience. Beginning teachers were found to have significantly higher discrepancy scores for 5 of the 32 competencies. These items included: 1) Teaching students with special needs, 2) Using effective classroom management, 3) Building a positive image of the agriculture program, 4) Teaching in the shop, greenhouse, and other lab settings, and 5) Conducting local FFA chapter activities. Three of the five competencies were part of the curriculum and instruction category. Statistically significant differences are reported in Table 25.

Table 25

Differences in WDS of Beginning (n = 38) vs. Experienced (n = 104) Agriculture Teachers

Competency	Beginning		Experienced		Sig. (p < 0.05)
	M	SD	M	SD	
Teaching students with special needs. ^a	3.78	4.37	2.09	3.38	.031
Using effective classroom management. ^a	3.58	3.52	2.20	2.94	.024
Building a positive image of the ag program. ^c	3.39	4.28	1.88	4.01	.013
Teaching in the shop, greenhouse, etc. ^a	2.39	2.42	1.24	2.82	.035
Conducting local FFA chapter activities. ^b	1.91	3.21	0.68	3.13	.036

Note. WDS = Weighted Discrepancy Score. p < 0.05.

^aCurriculum and Instruction Category. ^bLeadership and SAE Development Category.

^cProgram Planning and Professional Development Category.

Chapter 5: Summary, Conclusions, Implications, and Recommendations

With the steady consolidation and elimination of agricultural education teacher preparation programs in New England, it was uncertain how agriculture teachers were being prepared for the teaching profession and what inservice needs they had. Therefore, the purpose of this descriptive study was to describe the background, preparation, and perceived inservice needs of current secondary agriculture teachers in New England. Through the use of the Borich Needs Assessment Model (1980), perceived importance and ability levels for a variety of agricultural education competencies were quantified in order to rank high need areas. These prioritized inservice needs can then be used to improve both preservice and inservice teacher training programs.

It should be noted that the population of secondary agriculture teachers in New England was identified using information provided by state leaders and varied in each state depending on the structure of the agricultural education system. Thus, only those teachers who had documented teaching appointments in agriculture were included in the study. It should also be noted that this study involved self-reporting of teachers when completing the needs assessment portion of the instrument. While it is assumed that teachers would accurately and objectively self-report their own abilities, there is a risk for inflation or devaluation of actual performance.

Summary of Methodology

The census study included all employed agriculture teachers in the six New England states (N = 288) during the 2010 – 2011 school year. Data were collected using Dillman's Tailored Design Method for mixed-mode surveys using both electronic and paper-based

questionnaires (Dillman, Smyth, & Christian, 2009). A total of 164 questionnaires were completed for a response rate of 56.9%. The instrument was divided into four sections: 1) teacher background, preparation, and certification, 2) FFA/SAE participation and curriculum alignment, 3) needs assessment based on quality agricultural education program standards, and 4) open-ended questions focusing on the future of agricultural education.

Content and face validity were established using a panel of experts in the agricultural education field. The instrument was pilot tested with New Jersey agriculture teachers and was determined to be stable over time through test-retest reliability. The internal consistency of the needs assessment portion of the instrument was evaluated using Cronbach's Alpha and high reliability scores were obtained. Primary variables of interest were compared between early and late respondents to monitor for nonresponse error and no statistically significant differences were found. Since there were no significant differences between early and late respondents, the respondents were considered to be representative of the entire population.

Descriptive parameters were run to compare frequencies, percentages, mean scores and standard deviations. Mean weighted discrepancy scores (MWDS) were calculated for the needs assessment portion and used to rank each of the 32 competencies according to their inservice need. The Mann-Whitney U Test for independent samples was used to identify differences between inservice needs of traditionally versus alternatively certified agriculture teachers and between beginning versus experienced agriculture teachers.

Summary of Findings

The majority of respondents worked in the agricultural industry prior to becoming an agriculture teacher, most of whom had more than 5 years of experience. Very few

respondents had no prior experience in the agricultural industry. In addition, about a third of respondents were enrolled in agricultural education in middle/high school. Almost all of the respondents had completed a bachelor's degree, the majority of which were in agriculture or education. Almost two-thirds of the respondents also held a master's degree, most of which were in education.

Over two-thirds of the respondents completed a traditional teacher preparation program, the majority of which were in agricultural education and completed on-campus at a New England land grant university. Over 25% of the respondents had completed or were currently enrolled in an alternative licensure program, the majority of which were through a New England college or university and completed on-campus. Overall, the alternative licensure coursework was perceived as somewhat relevant to their career and neither easy nor difficult to fulfill. Very few respondents did not complete any type of teacher preparation program. Novice teachers (five or less years of teaching experience) were almost twice as likely to be alternatively certified than experienced teachers.

The majority of respondents held a professional (highest level) teaching license, most of which were in general agriculture or a specialized agricultural area. About a quarter of respondents were certified in science education; most were dually certified in both agriculture and science ($n = 30$) but some were only certified in science ($n = 11$). The majority of respondents had a standard 10-month teaching contract and served as the FFA advisor. Two teachers reported themselves as outside consultants for the school's agricultural education program. Teaching experience of respondents averaged 13.2 years in agricultural education and 15.3 years in all subjects. The majority of respondents felt prepared to teach

agriculture when they entered the profession. Finally, most respondents belonged to one or more professional organizations, including state agriculture teacher associations, the National Association of Agricultural Educators, and state general education associations.

Over half of respondents reported that all of their students were members of the National FFA Organization. However, only a quarter of respondents reported that all of their students had SAE programs. Respondents indicated that their agriculture curriculum had at least some alignment with national standards, including Common Core State Standards (CCSS), National/State Academic Standards, and States' Career Cluster Initiative (SCCI) Knowledge and Skills. Only half of the respondents reported alignment to the Curriculum for Agricultural Science Education (CASE).

Respondents reported that curriculum and instruction was the most important construct and the category in which they were most competent. The leadership and SAE development construct had the lowest importance and competency scores. "Writing grant proposals for external funding" was the top inservice priority, followed by "Managing and reducing work-related stress." All of the top 15 inservice needs were either in the curriculum and instruction or program planning and professional development constructs. Overall, leadership and SAE development had the lowest inservice need.

Alternatively certified teachers had significantly higher inservice needs than traditionally certified teachers on four items: 1) Using effective classroom management, 2) Using effective teaching strategies, 3) Motivating students to learn, and 4) Creating a professional development plan. Beginning teachers had significantly higher inservice needs than experienced teachers on five items: 1) Teaching students with special needs, 2) Using

effective classroom management, 3) Building a positive image of the agriculture program, 4) Teaching in the shop, greenhouse, or other lab settings, and 5) Conducting local FFA chapter activities.

Conclusions

Based on the findings of this study, the following conclusions were drawn regarding agriculture teachers in New England. Discussion of the implications of this study and recommendations for both practice and research are also included in this chapter.

Research Objective 1: Describe the agricultural and educational backgrounds of agriculture teachers in New England.

The agricultural industry is a major source of agriculture teachers in New England, with the majority of agriculture teachers having worked in the industry for more than five years. Many agriculture teachers were also involved in agricultural education, 4-H, and/or the FFA in their youth. In addition, over half of the agriculture teachers in New England majored in an agricultural field as an undergraduate. This information is significant for developing recruitment strategies for the agricultural education profession, especially in a region where there are no longer any university agricultural education departments. A concerted effort should be made to promote the agricultural education profession in the agricultural industry, at agricultural high schools and colleges, and through regional 4-H and FFA conventions. By targeting these areas, the profession will be most successful in recruiting the highest quality candidates.

The majority of agriculture teachers held a master's degree in an educational field. This may be indicative of increased state teacher licensure requirements, as many New

England states now require a master's degree in order to gain a professional teaching license. However, this information is also important for agriculture teacher preparation programming. If many agriculture teachers are looking for masters programs to fulfill licensure requirements, the profession may need to reexamine its existing graduate programs to ensure they align with agriculture teachers' needs.

Research Objective 2: Describe the teaching preparation and certification of agriculture teachers in New England.

Most agriculture teachers earned their teaching license through a traditional teacher preparation program in New England; however, most of these programs no longer exist today. Thus, the real impact of eliminated agricultural education teacher preparation programs may not be seen until the older generation of agriculture teachers retire. A very low number of teachers are receiving their agriculture teacher pre-service training outside of New England. This is especially true for alternatively certified teachers. This supports the finding that agriculture teachers are accepting employment in the same region where they are being prepared (Rocca & Washburn, 2008). However, future teachers may have to look outside New England if agricultural education teacher preparation programs are not available. A potential trend may result in more agriculture teachers completing science education programs in order to receive certification. Another possibility involves agriculture teachers gaining certification solely through state department of education alternative licensure programs. The downfall of this option is that these programs do not require specialized training but rather require very general education coursework, if any. None of these possibilities are ideal for maintaining a high quality agriculture teacher workforce in New

England because they do not provide the necessary preparation as identified by the profession (McLean & Camp, 2000; American Association for Agricultural Education, 2001).

Currently, the majority of agriculture teachers in New England are highly qualified, holding professional teaching licenses in their field. In addition, a considerable number of agriculture teachers are also certified in science. This is a very encouraging trend as more emphasis is put on academic integration in agricultural education (Carl D. Perkins Career and Technical Education Act of 2006: Public Law 109-270; Osborne, 2006).

Research Objective 3: Describe key program characteristics of agricultural education programs in New England, including FFA participation, SAE participation, and curriculum alignment.

Overall, agriculture teachers in New England place more emphasis on FFA participation than SAE programs. The majority of agriculture teachers serve as FFA advisors and the region boasts a relatively high level of student FFA participation. Less than ten teachers did not have an FFA chapter at their school. It is encouraging that most agriculture teachers are invested in this component of the agricultural education model. However, student SAE program participation is much lower. A contributing factor may be that few teachers have a 12 month contract for summer work. Overall, agriculture teachers do not place equal weight on the three components of agricultural education. Further investigation in to the lack of SAE program participation in New England is warranted.

The majority of agriculture teachers align their curriculum to national standards, including both vocational and academic standards. This is another positive finding regarding

agricultural education in New England. Alignment is necessary to ensure that agricultural education programs are providing a rigorous, relevant standards-based curriculum in order to increase the academic performance of students and best prepare them for college and future careers (Carl D. Perkins Career and Technical Education Act of 2006: Public Law 109-270; Osborne, 2006).

Almost all agriculture teachers belonged to one or more professional organizations. This indicates that they are invested in the education profession. Future studies could determine the level of their participation, particularly in leadership positions. While the National Association of Agricultural Educators (NAAE) is doing a satisfactory job recruiting New England teachers as members, more work can be done especially on the state association level. Connecticut is the only state with a strong state agriculture teachers' association affiliated with NAAE. In addition, NAAE should explore a possible relationship with the New England Agriculture Teachers Association. In contrast, the Association for Career and Technical Education (ACTE) has an extremely low membership rate in the New England states. Serious recruitment efforts need to be made in this region of the country. The level of New England agriculture teacher participation in professional organizations indicates they want to be involved in the profession. Therefore, this region has much potential for membership growth in the NAAE and ACTE. These organizations play an important role in professional development of the agriculture teacher workforce and are vital in an area where state and university agricultural education leadership is limited.

Research Objective 4: Determine New England agriculture teachers' perceived importance and competence within the curriculum and instruction, leadership and SAE development, and program planning and professional development constructs of quality agricultural education program standards.

Agriculture teachers in New England viewed curriculum and instruction as the most important part of their agriculture programs, while leadership and SAE development was seen as the least important part. In addition, teachers view themselves as most competent in the area of curriculum and instruction and least competent in the area of leadership and SAE development. In general, teachers perceived themselves more competent in the areas they believed were most important. However, for all 32 competencies, agriculture teachers rated their ability lower than the item's importance. This indicates that more training in all areas would improve the overall quality of the agriculture teacher workforce in New England. In addition, specific training is necessary for areas of identified weakness including organizing alumni associations, writing grant proposals, preparing FFA award applications, managing work-related stress, and training FFA chapter officers.

Yet, more importantly the profession needs to focus on changing the overall mindset of agriculture teachers regarding the value of leadership and SAE development. Teachers must understand the benefits of these intra-curricular components and be willing to invest time developing these parts of their program. Until teachers "buy-in" to these components, no improvements in these areas can be made. Further research investigating why New England agriculture teachers view FFA and SAE programs as less important than classroom

instruction will help determine what steps are necessary to change this mindset and improve the quality of the total agricultural education program.

Research Objective 5: Determine and prioritize the inservice needs of New England agriculture teachers using the Borich Needs Assessment Model.

Overall, the program planning and professional development category had the highest average inservice need, followed by the curriculum and instruction category. These results support Joerger's (2002) findings in Minnesota. "Writing grant proposal for external funding" and "Managing and reducing work-related stress" were the top inservice needs and ranked far above the other competencies. This data supports prior research findings that identified these items as both significant problems faced by agriculture teachers (Myers, Dyer & Washburn, 2005; Boone & Boone, 2007) and top inservice needs (Roberts & Dyer, 2004). Other high need areas including keeping current with advances in agricultural technology, recruiting students, classroom management, motivating students to learn, working with students with special needs, maintaining alumni associations, and teaching critical and creative thinking have also been previously identified as inservice needs of the profession (Garton & Chung, 1996; Joerger, 2002; Roberts & Dyer, 2004; Duncan et al., 2006; Sorensen, Tarpley & Warrick, 2010). This indicates that agriculture teachers across the nation need more training on classroom instructional techniques, agricultural technology, and recruiting high quality students.

However, several differences were found in the inservice needs of New England agriculture teachers. Numerous other studies have identified SAE development, advisory committee, FFA award applications, and FFA contest preparation as high inservice needs.

However, these items were ranked as low priority in this study. This supports previous research by Washburn et al. (2001) which concluded that inservice needs differ by geographical region. It is important to note that New England teachers are not necessarily more competent at these items than other agriculture teachers, but rather they perceive these items as less important. This may be due in part to the lack of formal training in FFA and SAE program development during their teacher preparation programs.

Research Objective 6: Compare the inservice needs of agriculture teachers based on their preparation program and years of agricultural education teaching experience.

Previous research has found that there are no significant differences in perceived teaching and learning competency between traditionally and alternatively certified agriculture teachers in Georgia (Duncan & Ricketts, 2008). In addition, traditionally certified agriculture teachers in Florida were found to have greater self-perceived inservice needs overall (Roberts & Dyer, 2004). However, these trends do not seem to apply to New England. Traditionally certified teachers were found to have significantly lower inservice needs for four competencies in the areas of instruction and professional development. This means that alternatively certified teachers are less competent with effective classroom management and instruction and have a more difficult time motivating students. In addition, alternatively certified teachers are less able to create a quality professional development plan. All four of these items are competencies that are taught in traditional teacher preparation programs. Although some time may be devoted to these items in alternative licensure programs, it seems they are not being covered in enough detail or are not applicable to the agricultural education program model. Additional pre-service or inservice training in

agricultural education teaching pedagogy and professional development is necessary for alternatively certified agriculture teachers.

Beginning agriculture teachers were found to have significantly higher inservice needs for five competencies in the areas of instruction, program planning, and FFA. These results are supported by previous research in Georgia which compared the inservice needs of experienced and beginning agriculture teachers (Layfield & Dobbins, 2002). This indicates that professional development and inservice training should be tailored to different groups of agriculture teachers. Beginning teachers in New England need more support working with students with special needs and utilizing effective classroom management. In addition, beginning agriculture teachers also need supplementary inservice training in areas specific to their discipline, including teaching in lab settings, promoting the agriculture program, and conducting FFA activities. Professional development opportunities do exist for working with students with special needs and classroom management in the general education realm. However, if the agricultural education profession does not provide necessary inservice training in identified areas that are specific to this discipline, then beginning teachers will not receive the support they need and the quality of the agricultural education program will suffer.

Discussion

As a whole, the agriculture teacher workforce in New England is in a transitional stage. The data indicates that the majority of agriculture teachers are highly qualified, having completed a traditional teacher preparation program and professional teaching license in agricultural education. However, almost all of the agricultural education teacher preparation

programs attended by respondents are no longer in existence. The result is an increase in alternative licensure programs for agricultural education certification. While these alternatively certified individuals have significant experience in the agricultural industry, they have limited training in all three components of the agricultural education model. Consequently, alternatively certified agriculture teachers new to the profession have substantially higher inservice needs than the previous generation of agriculture teachers in New England. Without university agricultural education departments, it is uncertain who will provide the required training necessary to ensure a high quality agriculture workforce. Professional organizations, such as the National Association of Agricultural Educators, may be one route for providing needed professional development.

Weak SAE programs are another major concern for agricultural education in New England, as seen in other regions of the country including New York (Steele, 1997) and North Carolina (Wilson & Moore, 2007). The data from this study indicated that agriculture teachers perceive developing SAE programs as lower importance (3.94 on a 5 point scale) than conducting FFA activities (3.99) or curriculum and instruction (4.59). This is also reflected in the low level of student SAE participation, with less than 40% of programs having SAE participation above 75%. Although this is slightly higher SAE participation than previous studies in New York (Steele, 1997) and North Carolina (Wilson & Moore, 2007), it is still much lower than FFA participation. This work-based learning is an integral part of the agricultural education model but seems to be considered an optional component in many of the agriculture programs in New England. Therefore, a more detailed examination of SAE program barriers is recommended for this region.

Additionally, the profession needs to be concerned regarding program funding and teacher burn-out. The data from this study supports other research that also identified grant writing as a priority for agriculture teachers. Collaboration with outside organizations to provide grant writing workshops to agriculture teachers is recommended. In addition, managing and reducing work related stress was also a concern for New England teachers and teachers in previous studies. Therefore, integrating time management and stress reduction programs into both pre-service and inservice training for agriculture teachers should be a priority to help prevent teacher burnout and attrition.

Finally, this study highlighted the disproportionate distribution of agriculture teachers throughout the New England states. Connecticut had the largest portion (36.8%) of the workforce concentrated within its boundaries. The University of Connecticut was also the only agricultural education teacher preparation program currently graduating certified agriculture teachers in the region. It was beyond the scope of this study to determine if there was a relationship between these two factors. It is also unclear as to the reason why the three northern states of Maine, New Hampshire and Vermont had a significantly lower number of agriculture teachers than Connecticut and Massachusetts, especially considering the large agricultural sectors in these states. In addition, Maine had the largest percentage (21.4%) of agriculture teachers who did not complete any type of teacher preparation program. A more thorough investigation into the structure of agricultural education in each state is warranted.

Recommendations

Based on this research, several recommendations for practice can be made:

1. The profession should work with land-grant universities in New England to create a regional agricultural education teacher preparation program that provides instruction in technical agricultural content and formal training in classroom/laboratory instruction, SAE programs, and the National FFA Organization.
2. A directory of all agriculture teachers in New England should be compiled in order to increase communication and collaboration among professionals in the region.
3. Recruitment efforts for the agricultural education profession should be targeted at the agricultural industry, agricultural high schools and colleges, and regional 4-H and FFA conventions in New England.
4. Existing distance education master's programs in agricultural education should promote their programs to current agriculture teachers in New England, as many of these states are now requiring a graduate degree to obtain a professional teaching license.
5. NAAE and ACTE should actively recruit new members from the New England region and encourage agriculture teachers to participate in professional development and leadership opportunities. In addition, the NAAE needs to help New England states strengthen their state agriculture teacher associations.
6. Professional development programs need to be developed for different groups of agriculture teachers (beginning teachers, alternatively licensed teachers, etc.) based on their identified needs. Overall, more training in agricultural education instruction and program planning is needed for the agriculture teacher workforce in New England.

7. Collaboration with outside organizations to provide grant writing workshops to agriculture teachers is recommended.
8. Integrating time management and stress reduction programs into both pre-service and inservice training for agriculture teachers should be a priority to help prevent teacher burnout and attrition.

Based on this research, the following research recommendation can be made:

1. Additional research should be conducted to explore why New England agriculture teachers view FFA and SAE programs as less important than classroom instruction. A detailed examination of SAE program barriers is recommended for this region.
2. As professional organizations play an important role in the development of the agriculture teacher workforce, research should be conducted to determine the level of participation of agriculture teachers in New England, particularly in leadership positions.
3. A state-by-state analysis of agriculture teachers and their programs should be conducted to determine what similarities and differences exist throughout the New England region. This information would be helpful in creating regional programs for agriculture teacher professional development and regional opportunities for student enrichment.
4. Research should be conducted to determine what inservice is currently available to New England agriculture teachers, including what organizations are involved in professional development and what delivery methods are being utilized.

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APPENDICES

Appendix A
IRB Approval Letter

NC STATE UNIVERSITY

Campus Box 7514
Raleigh, North Carolina 27695-7514

919.515.2444 (phone)
919.515.7721 (fax)

From: Carol Mickelson, IRB Coordinator
North Carolina State University
Institutional Review Board

Date: April 28, 2011

Title: A Comprehensive Census Study of the Agriculture Teacher Workforce in New
England

IRB#: 2001

Dear Ms. Urrichio,

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101. b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

NOTE:

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please forward a copy of this letter to your faculty sponsor, if applicable. Thank you.

Sincerely,



Carol Mickelson
NC State IRB

Appendix B
E-Mail to Participants

From: Cassie Uricchio [mailto:ckuricch@ncsu.edu]
Sent: Fri 5/13/2011 6:31 PM
To:
Subject: Agriculture Teacher Research Project

Dear ,

My name is Cassie Uricchio and I am looking for your input on agricultural education! I taught agriculture in Massachusetts for three years and am currently on a leave of absence at North Carolina State University working on my graduate degree in Agricultural & Extension Education. I am passionate about keeping agricultural education alive and strong in my home region of New England; therefore, I am focusing my dissertation on the unique needs of our profession in this region. I wanted to introduce myself to you and ask for your participation in my study.

The research project is on the agriculture teacher workforce in the New England, concentrating on agriculture teachers' preparation and current inservice needs. The information will be used to develop programs that support agriculture teachers in order to strengthen (and hopefully expand) agricultural education in this region. Your participation is strictly voluntary and your responses will be anonymous. Further information regarding your rights as a research participant is located at the bottom of this email.

Your participation will entail completing an on-line questionnaire about your agricultural background, teaching preparation and current inservice needs. The questionnaire should take 10 - 20 minutes of your time. If you choose to participate, simply follow the link to the questionnaire and begin! If you do not wish to participate in this study, please respond to this email to remove your name from the list.

Link: Survey <<http://app.fluidsurveys.com/surveys/ckuricch/new-england-ag-teachers/langen?code=wGm3x>>

As a "Thank You" for your time, all participants who complete the survey will be automatically entered into a drawing for two \$50 Visa Gift Cards. The winners will be notified at the end of the survey via this email address.

Feel free to contact me if you have any questions or concerns regarding the study. Thank you for your consideration and for all the work you do!

Sincerely,

Cassie Uricchio, Principal Investigator
NCSU Graduate Student
ckuricch@ncsu.edu
860-214-0343

Gary Moore, Faculty Advisor
Professor of Agricultural & Extension Education
gary_moore@ncsu.edu
(919) 515-1756

=====

This email was sent on behalf of Cassie Uricchio using FluidSurveys.com
<<http://www.fluidsurveys.com/>> [1729 Bank Street - Suite 200, Ottawa, Ontario - K1V7Z5].
Click here to unsubscribe <<http://app.fluidsurveys.com/surveys/ckuricch/new-england-ag-teachers/?code=wGm3x&invact=unsubscribe>> from future survey invites from this user.

Appendix C
Reminder Emails to Participants

----- Original Message -----

From: ckuricch@ncsu.edu

To:

Sent: Wednesday, June 1, 2011 10:20 AM

Subject: Reminder for Agriculture Teacher Survey ☺

Dear ,

Just a friendly reminder to please complete the agriculture teacher survey by June 15th. Your input is sincerely appreciated!

In case you need it again, the link can be found here: [Survey](#)

Thank you!

Cassie Uricchio, Principal Investigator
NCSU Graduate Student
ckuricch@ncsu.edu
(860) 214-0343

Gary Moore, Faculty Advisor
Professor of Agricultural & Extension Education
gary_moore@ncsu.edu
(919) 515-1756

=====
This email was sent on behalf of ckuricch@ncsu.edu using FluidSurveys.com [1729 Bank Street - Suite 200, Ottawa, Ontario - K1V7Z5].

Click here to [unsubscribe](#) from future survey invites from this user.

----- Original Message -----

From: ckuricch@ncsu.edu

To:

Sent: Monday, June 13, 2011 9:26 AM

Subject: Final Reminder for Agriculture Teacher Survey - June 15th!

Dear _____,

Just a friendly reminder to please complete the agriculture teacher survey by June 15th. Your input is sincerely appreciated!

In case you need it again, the link can be found here: [Survey](#)

Thank you!

Cassie Uricchio, Principal Investigator
NCSU Graduate Student
ckuricch@ncsu.edu
(860) 214-0343

Gary Moore, Faculty Advisor
Professor of Agricultural & Extension Education
gary_moore@ncsu.edu
(919) 515-1756

=====
This email was sent on behalf of ckuricch@ncsu.edu using FluidSurveys.com [1729 Bank Street - Suite 200, Ottawa, Ontario - K1V7Z5].
Click here to [unsubscribe](#) from future survey invites from this user.

Appendix D
Mailed Letter to Participants

Department of Agricultural and Extension Education
Campus Box 7607
Raleigh, NC 27695-7607

<http://www.cals.ncsu.edu/agexed/>

June 15, 2011

Dear

My name is Cassie Uricchio and I am looking for your input on agricultural education! I grew up in Connecticut and taught agriculture in Massachusetts for three years. I am currently working on my graduate degree in Agricultural & Extension Education at North Carolina State University. I wanted to introduce myself to you and ask for your participation in my doctoral research project.

The research project focuses on the unique needs of our profession in the New England region, including agriculture teachers' preparation and current inservice needs. The information will be used to develop programs that support agriculture teachers in order to strengthen agricultural education in New England. Your participation is strictly voluntary and your responses will be anonymous. Your input is so important in order to document the true needs of your profession!

Your participation will entail completing a questionnaire which should take about 15 minutes of your time. If you choose to participate, I ask that you look over the enclosed informed consent form outlining your rights as a participant. Then, complete the paper questionnaire and return it in the postage-paid envelope. I ask that you complete the survey before **July 1, 2011**.

As a thank you, all participants who complete the survey will be automatically entered into a drawing for a **\$50 Visa gift card!**

If you do not wish to participate in this study, please contact me at ckuricch@ncsu.edu or 860-214-0343 to remove your name from the list. Please let me know if you have any questions or suggestions regarding the study.

Thank you for your consideration and for all the amazing work you do!

Sincerely,

Cassie Uricchio
Principal Investigator
NCSU Graduate Student
ckuricch@ncsu.edu
860-214-0343

Dr. Gary Moore
Faculty Advisor
Professor of Agricultural & Extension Education
gary_moore@ncsu.edu
(919) 515-1756

enclosures: informed consent form, questionnaire

Appendix E
Informed Consent Form

North Carolina State University
INFORMED CONSENT FORM for RESEARCH

A Comprehensive Census Study of the Agriculture Teacher Workforce in New England

Cassandra K. Uricchio
Principal Investigator

Dr. Gary Moore
Faculty Sponsor

What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary and is not a job requirement. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher named above.

What is the purpose of this study?

The purpose of this descriptive study is to determine the preparation and inservice needs of current secondary agricultural educators in New England. The data collected will be used to provide insight on the current status of agricultural education in New England and recommendations for preservice and inservice training of agriculture teachers in this region.

What will happen if you take part in the study?

If you agree to participate in this study, you will be asked to complete a questionnaire either on-line or a paper version. The questionnaire should require about 15-20 minutes of your time and ask you to check the responses that best describe your teacher preparation, agricultural/career background, certification, and perceived inservice needs. No further contact will be required. If you are completing this survey online, all responses to the questionnaire will be anonymous and will in no way be linked to you or your email address. If you are completing this survey by paper and pencil you should not include your name on the form. If you are completing this survey via phone the researcher will not record your identity with your answers.

Risks

The risks associated with participating in this study are minimal.

Benefits

No promise or guarantee of benefits has been made to encourage you to participate. The data collected from you during this study will be used to develop programs that support agriculture teachers in order to strengthen (and hopefully expand) agricultural education in New England.

Confidentiality

The information in the study records will be kept confidential to the full extent allowed by law. Data will be stored securely in locked desk drawer located in an office with a locked door and on a password protected computer. You will NOT be asked to write your name on any study materials so that no one can match your identity to the answers that you provide. Only the principal investigator will have access to files and will know the participants. No reference will be made in oral or written reports which could link you to the study. Upon completion of the study, all forms of data (electronic and paper) will be erased or shredded promptly.

The survey will include questions about your agricultural and career background, teacher preparation and certification, your perceived importance and ability level for various competencies, and your ideas about

challenges you face as an agriculture teacher. To protect your confidentiality, do NOT write any identifying information on the survey (such as your name). In addition, you should complete this survey in a private setting outside the workplace. If you are completing the survey on-line, you should not leave the computer unattended while completing the survey and close the web browser after you save or submit your survey responses. If you are completing the paper version of the survey, you should mail the completed survey from your home or a public mailbox and not from your workplace.

Data from the survey responses will not be reported on an individual basis; rather all data will be reported using statistics on a region-wide and state-by-state basis. The two open-ended questions at the end of the survey will be analyzed using open and axial coding to identify categories. These categories will then be ranked according to frequency on a region-wide and state-by-state basis. No direct quotes from these questions will be included in the report.

No one outside the research team will be provided with a report of individual questionnaire responses. Thus, your employer will NOT be provided with a report of any individual questionnaires.

Compensation

For participating in this study, you will be entered into a drawing for a \$50 Visa gift card. . All participants who complete the survey will be entered into a drawing for a \$50 visa gift card. This will in no way be connected to their survey responses. Thus, any participant that completes the entire survey will be entered into the drawing regardless of their responses. At the conclusion of the study, one email address will be randomly selected and the winner notified via email. The gift card will be mailed to the address they provide. The identity of the winner will also be kept confidential. The odds of winning will depend on the number of participants but will not exceed 1:100.

What if you have questions about this study?

If you have questions at any time about the study or the procedures, you may contact the researcher, Cassandra K. Uricchio, at ckuricch@ncsu.edu , or 860-214-0343.

What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-4514).

Consent To Participate

By completing the questionnaire, you agree that “I have read and understand the above information. I have been informed that I can make a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.”

Should I have any questions about this study or its conduct, or participants’ rights, I may contact:

Cassandra K. Uricchio, Principal Investigator
860-214-0343
ckuricch@ncsu.edu

Appendix F
Survey Instrument

New England Agriculture Teacher Workforce Questionnaire



Doctoral Research Project
Cassie Uricchio
ckurich@ncsu.edu

Part I: Teacher Characteristics

First, we are going to ask you some questions about your background and teaching experience. This information will be used to describe the overall characteristics of agriculture teachers in New England.

-

Please select all responses that apply to your agricultural and career background.

(Check ALL that apply.)

- I was enrolled in agricultural education in middle/high school.
- I was involved in FFA as a youth.
- I was involved in 4-H as a youth.
- I worked in the agricultural industry before becoming an agriculture teacher.
- I taught a different subject area before teaching agriculture.
- I grew up on a farm or family-owned agricultural business (ex. nursery).
- Other, please specify:
- None of the above.

How much full-time, non-teaching work experience (or part-time equivalent) do you have in agriculture, natural resources, and other directly related industries?

(Note: Please do NOT include your teaching experience.)

- None
- Less than 12 months (less than 2000 hrs)
- 1 - 3 years (2000 - 6000 hrs)
- 3 - 5 years (6001 - 10,000 hrs)
- More than 5 years (more than 10,000 hrs)

**Please select all post-secondary degrees that you have earned.
(Check ALL that apply.)**

- Trade or Technical School Certificate
- Associate's Degree in Education (including Agricultural Education)
- Associate's Degree in Agricultural Field
- Associate's Degree - Other
- Bachelor's Degree in Education (including Agricultural Education)
- Bachelor's Degree in Agricultural Field
- Bachelor's Degree - Other
- Master's Degree in Education (including Agricultural Education)
- Master's Degree in Agricultural Field
- Master's Degree - Other
- Other, please specify:

Please select the type of teacher preparation program you completed to become an Agriculture Teacher.

Traditional Teacher Preparation Program - Teacher education degree program at a college or university that leads to teacher certification.

Alternative Licensure Program - Program in which teacher completes certification requirements without enrolling in a degree program and applies directly to the state department of education for certification. (Post-Baccalaureate Teacher Licensure Programs that do not result in a graduate degree fall into this category.)

- I completed a Traditional Teacher Preparation Program – **GO TO PAGE 3**
- I completed an Alternative Licensure Program – **GO TO PAGE 5**
- I am currently completing an Alternative Certification Program – **GO TO PAGE 5**
- I did not complete a Teacher Preparation Program – **GO TO PAGE 7**

TRADITIONAL TEACHER PREPARATION PROGRAM QUESTIONS:

In what content area did you complete your teacher preparation program?

Agricultural Education

Science Education

Other, please specify:

Please indicate which of the following you received from completing your traditional teacher preparation program.

Bachelor's Degree

Master's Degree

Integrated Bachelor's/Master's Degrees

Other, please specify:

Please indicate if this program was on-campus or distance education.

On-campus - Students are required to commute to campus for live class meetings for the majority of courses.

Distance Education - Students are not required to commute to campus for live class meetings; the majority of class material is presented via the internet.

On-Campus

Distance Education

Hybrid (both on-campus and distance ed components)

Other, please specify:

Please list the name of the college or university through which you completed your traditional teacher preparation program below.

PLEASE SKIP TO PAGE 7

ALTERNATIVE LICENSURE QUESTIONS:

Please indicate where you completed (or will complete) your Alternative Licensure program.

Through a college or university

Through the State Department of Education

Through a local school district/on-the-job training

Other, please specify:

In your opinion, how relevant were the required courses/training to your career as an agriculture teacher?

Extremely Relevant

Relevant

Somewhat Relevant

Not Very Relevant

Completely Irrelevant

How easy was it to locate and complete the required courses/training for certification?

Very Easy

Easy

Neither Easy nor Difficult

Difficult

Very Difficult

Please indicate if your required coursework/training was delivered on-site or through distance education.

On-site - Students are required to commute to a common location for live meetings for the majority of coursework/training.

Distance Education - Students are not required to commute to a common location for live meetings; the majority of course/training material is presented via the internet, videos, or mail correspondence.

On-Campus

Distance Education

Hybrid (both on-campus and distance ed components)

No coursework/training required

Other, please specify:

If you completed (or will complete) an alternative licensure program through a college or university, please list the name of the institution(s) below.

Please select which type of teacher license/certificate you currently hold in the field of Agricultural Education.

- No license
- Temporary (Interim/Transitional/Apprenticeship) License
- Initial (Preliminary) License
- Professional (Highest Level) License
- Other, please specify:

Please list all the teaching and/or administrative areas in which you are currently certified. (These are sometimes called endorsement areas.)

Include agricultural education AND other content areas.

How many years of teaching experience do you have?

(Note: Include the current school year.)

Agricultural Education Teaching Experience

TOTAL Teaching Experience (including Ag Ed & other content areas)

Overall, how prepared were you to teach agricultural education on your first day of teaching?

- Very Prepared
- Prepared
- Somewhat Prepared
- Unprepared
- Very Unprepared

Do you currently have an extended contract that allows you to supervise student agricultural projects and manage the agricultural program during the summer months?

- No, I have a standard 10 month teaching contract.
- Yes, I have an extended contract for limited summer work.
- Yes, I have a 12 month contract.
- Other, please specify:

Are you currently an FFA Advisor?

- Yes
- No

Please indicate your membership in any of the following professional organizations.

(Check ALL that apply.)

- State Teachers' Association (General Education)
- State Agriculture Teachers' Association
- State FFA Alumni
- State Career & Technical Education Association
- National Association of Agricultural Educators (NAAE)
- Association for Career & Technical Education (ACTE)
- National Education Association (NEA)
- New England Agriculture Teachers Association (NEAT)
- Maine Forestry Instructors' Association (MFIA)
- Other, please specify:
- None

Part II: Program Characteristics

Now, we are going to ask you some questions regarding your agricultural education program. This information will be used to describe the overall characteristics of agricultural education programs in New England.

How many of your agricultural education students are members of the National FFA Organization?

- None
- 1% - 24%
- 25% - 49%
- 50% - 74%
- 75% - 99%
- 100%

How many of your agricultural education students have a Supervised Agricultural Experience (SAE) project?

- None
- 1% - 24%
- 25% - 49%
- 50% - 74%
- 75% - 99%
- 100%

Do you incorporate any of the following national initiatives into your agriculture curriculum?

	No Alignment	Some Alignment	Extensive Alignment
Curriculum for Agricultural Science Education (CASE) Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Common Core State Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
States' Career Clusters Initiative (SCCI) Knowledge & Skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other National or State Academic Standards	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part III: Agricultural Education Needs Assessment

The following questions will ask you to score each item in two ways:

1. The **IMPORTANCE** of each item to your agricultural education program
2. Your current level of **COMPETENCY (ABILITY)** for each item

This information will be used to determine both the strengths and current needs of agriculture teachers in New England.

CURRICULUM & INSTRUCTION

- | | |
|-----------------------------------|------------------------|
| 1 – Not important or Not Utilized | 1 – Not Competent |
| 2 – Low Importance | 2 – Low Competency |
| 3 – Somewhat Important | 3 – Somewhat Competent |
| 4 – Important | 4 – Competent |
| 5 – Very Important | 5 – Very Competent |

IMPORTANCE						COMPETENCY				
1	2	3	4	5		1	2	3	4	5
		√			<i>Example item: Using textbooks to support learning.</i>				√	
					Using effective teaching strategies.					
					Teaching in the shop, greenhouse, and other lab settings.					
					Using effective classroom management.					
					Using computer technology in instruction.					
					Using a variety of methods to assess student learning.					
					Keeping curriculum current with advances in agricultural technology.					
					Teaching students with special needs.					
					Integrating science and agriculture.					
					Incorporating academic standards into the curriculum.					
					Teaching students to think critically and creatively.					
					Creating unit and lesson plans.					
					Motivating students to learn.					

LEADERSHIP & SAE DEVELOPMENT

IMPORTANCE						COMPETENCY				
1	2	3	4	5		1	2	3	4	5
					Develop SAE (Supervised Agricultural Experience) opportunities for all students.					
					Training FFA chapter officers.					
					Preparing students for agriculture/FFA contests.					
					Supervising students' SAE programs.					
					Teaching leadership.					
					Teaching record-keeping skills.					
					Preparing FFA award applications.					
					Conducting local FFA chapter activities.					

PROGRAM PLANNING & PROFESSIONAL DEVELOPMENT

IMPORTANCE						COMPETENCY				
1	2	3	4	5		1	2	3	4	5
					Designing an Ag program that meets community needs.					
					Recruiting and retaining high quality students, including nontraditional students.					
					Managing classroom and laboratory facilities.					
					Working with a local advisory committee.					
					Developing school and community partnerships.					
					Building a positive image of the agriculture program.					
					Evaluating the local agriculture program.					
					Writing grant proposals for external funding.					
					Creating a professional development plan.					
					Managing and reducing work-related stress.					
					Developing my technical agriculture knowledge/skills.					
					Organizing and maintaining an alumni association.					

Part IV: Future of Agricultural Education

In this last section, we will ask you for your opinions about the challenges facing agricultural education and ways in which we can strengthen programs. This information will be used to help determine recommendations for agricultural education in New England.

-

Please list the top three (3) challenges you face as an agriculture teacher in your state or region.

Please list the top three (3) ways in which agricultural education can be strengthened in your state or region.

Please feel free to include any additional comments regarding the survey below.

Thank you for taking the time to complete this survey! 😊

Please return completed survey to:

Cassie Uricchio

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Chester, MA 01011

Questions/comments?

ckuricch@ncsu.edu

NC STATE UNIVERSITY

AGRICULTURAL AND EXTENSION EDUCATION

Appendix G

Challenges Facing Agricultural Education in New England

Connecticut:

Funding & Resources

- a. \$
- b. Budget - local control - always feel need to justify program
- c. Budget concerns
- d. Funding
- e. Funding
- f. Funding
- g. Funding
- h. Funding
- i. Funding
- j. Funding
- k. Funding for lab materials
- l. Funding for new programming
- m. Funding inequity from the State Department of Education
- n. Funding shortage
- o. Funding, Funding, Funding
- p. Hoping that with the recession, that we do not lose too much funding
- q. Keeping adequate funding at the state level
- r. Lack of funding
- s. Lack of funds
- t. Lack of land laboratory
- u. Local and state funding
- v. Maintaining funding
- w. Money
- x. New textbooks
- y. Resources for instruction (land lab, field trips etc.)
- z. School budget/funding
- aa. State funding per student is low
- bb. Supplies and materials

Recruitment & Retention of Students

- a. Developing Curriculum for the non-traditional students
- b. Fitting ag in schedules
- c. Getting ag classes to fit into a student's schedule they are trying to take many AP courses
- d. Have designated towns for each ag school (so we are not competing against each other) with no limit on enrollment number from the sending town
- e. Lack of student diversity
- f. Lowering enrollment (in total) high school (increased \$ to live in area)
- g. Maintaining heterogeneity in classrooms
- h. Meeting the needs of variety of students

- i. Out of district towns limiting the number of students that they will send
- j. Poor economy affects sending towns willingness to send kids
- k. Recruiting good students
- l. Recruiting plant science students
- m. Recruiting quality students
- n. Recruiting students in an area with a great deal of competition
- o. Recruitment
- p. Recruitment
- q. Recruitment of diverse student population
- r. Recruitment of students
- s. Retention of students
- t. Retention of top students
- u. Scheduling students for their appropriate core curriculum areas
- v. School-choice programs becoming more available and competitive
- w. Student awareness of programs available state wide
- x. Student recruitment & retention
- y. Student Retention
- z. Student transportation
- aa. Students that want to learn aquaculture and get their hands dirty

Time Management

- a. Balancing time between teaching and personal life
- b. Balancing work & personal life (ha! what personal life?) :)
- c. Colleagues who are BURNED OUT and won't retire
- d. Finding the time to do all parts of my job effectively
- e. Lack of time
- f. Lack of time to learn (i.e. PD)
- g. Managing schedule
- h. Managing stress and time
- i. Not enough time in the day to teach everything (lots of "school interruptions)
- j. Paperwork time demands
- k. Time
- l. Time
- m. Time - too much to do and not enough time
- n. Time management
- o. Time management
- p. Time management
- q. Time to do everything
- r. Time, time, time
- s. Working too many hours to complete comprehensive program
- t. Keeping up with the facility

Professional Development

- a. Challenging myself in order to grow as a professional
- b. Getting release time to attend workshops
- c. Integrating current/new technologies (agriculture based and classroom/ student based)
- d. Keeping abreast of changes in technology and incorporating them into instruction
- e. Keeping current with technology
- f. Keeping up with technology
- g. Post graduate courses
- h. Professional Development Opportunities
- i. Professional development programs
- j. Seeking new leadership challenges
- k. Staying up to date with new ag technology
- l. Technology
- m. Time for Professional Development

Academic Requirements & Standards

- a. Academic requirements
- b. Balancing local ag ed program needs with national/state standards
- c. Cross credit
- d. High stakes tests
- e. Increased graduation requirements
- f. Integrating standards for teaching and learning, science, ag, and math effectively
- g. More requirements (set forth by local or state) for graduation
- h. Not many other Ag Schools have the standards we do
- i. Standards
- j. State assessments have nothing to do with what goes on in the classroom/shop
- k. State ed mandates, etc.

Administrative Support

- a. Admin paperwork
- b. Administrative indifference to program needs
- c. Administrators who do not understand the importance of vocational education
- d. Lack of educational leadership from administration
- e. Lack of state support
- f. Maintaining support from politicians
- g. Not enough support from the school administration
- h. Restraint from administration
- i. Too many "power players" in administration
- j. Turnover in school leadership

Image of Agriculture

- a. Ag is for dummies

- b. Agriculture is not known in CT and as a whole communities don't appreciate ag programs
- c. Connecticut residents are so far removed from agriculture that they don't understand it's importance
- d. Many people are unaware of the program and all the benefits
- e. Overcoming the dated image of ag education
- f. Public perception
- g. Public Perception of what we teach
- h. Recognition of importance

Local Support

- a. Alumni Assoc organization
- b. Community and Parent involvement
- c. Community involvement
- d. Community support
- e. Consulting committee
- f. Local Support
- g. Parental involvement
- h. Parents who believe that their child lives in Lake Wobegon

SAE Programming

- a. Finding appropriate industry level SAE experiences.
- b. Finding good SAE projects for our students with a lack of farms/jobs in the area
- c. Getting students to buy in to SAE
- d. Employment regulations
- e. No 12 month pay
- f. SAE Placement for students
- g. State youth labor laws conflicting with SAE possibilities
- h. Stipend for supervising SAE (12 month contract)

FFA/Leadership Development

- a. Career Development Events are run very poorly
- b. Conflicts with how state CDEs are run
- c. Dealing with overly competitive teachers and CDE fallout
- d. Little enthusiasm from students for Degrees
- e. Maintaining an effective FFA
- f. Superintendents of the CDE's keep changing, which in turn slightly changes the contest based on the change

Other

- a. Classroom Management
- b. Liability
- c. Small staff numbers

Massachusetts:

Funding & Resources

- a. Adequate funding
- b. An external source for equipment maintenance
- c. Budget cuts
- d. Expense of teaching agriculture competently
- e. Financial support from district
- f. Funding
- g. Funding
- h. Funding
- i. Funding
- j. Funding
- k. Funding for the new areas of Agriculture in New England
- l. Funding of programs
- m. Funding our program
- n. Lack of a dedicated "theory" classroom
- o. Lack of funding
- p. New lab equipment
- q. No textbooks
- r. Support for year round care of ag resources

Academic Requirements & Standards

- a. Collaborative planning time, particularly with academic departments, is non-existent.
- b. Completing our Environmental Science state frameworks in the time we are given.
- c. Hands-on learning is becoming a distant reality
- d. Incomplete frameworks
- e. Lack of common planning time with academic teachers.
- f. Laws regarding new programs
- g. Link to college programs
- h. MA DOE dictating curricula, but has neither experience in any NRM/ag field nor solicits input from those who do.
- i. Meeting NCLB Standards
- j. Need to cover more topics, less thoroughly
- k. Related lesson resources
- l. State initiatives that take time but don't produce results
- m. Time in learning reduced by testing
- n. Time on learning

SAE Programming

- a. 18 year old equipment usage for job placement or Co-op
- b. Finding graduates jobs
- c. Job placement (poor economy)

- d. Lack of cooperative work programs for students
- e. Lack of SAE opportunities for students
- f. Loss of agricultural opportunities in the state.
- g. Our SAE system is flawed few students work and the time is too little
- h. Poorly implemented SAE program
- i. Regulations and students equipment use laws
- j. SAE is not being acknowledged
- k. SAE opportunities
- l. The push for work study
- m. Work Placement and Co-op

Image of Agriculture

- a. Agriculture not seen as a priority in vocational education
- b. Being considered a vocational teacher; agriculture has moved towards a more technical era, this required a college degree for many careers.
- c. It seems, staff and community members do not view our vocation as a viable industry
- d. Lack of interest in agriculture
- e. Lack of overall farming
- f. Loss of dairy farming in the area
- g. Not enough people understanding the importance of the field, recruiting students who both them and their parent understand the importance of ag training.
- h. Recognition as viable program
- i. The changing agricultural landscape and how to change the agricultural programs with it
- j. The misunderstanding what agricultural education is now, versus 50 years ago.
- k. The selling of ag land
- l. Value of agriculture.

Administrative Support

- a. Admin Support
- b. Administration
- c. Administration
- d. Administration support
- e. Administration wasting money on non-agricultural programs
- f. Administration with zero agriculture experience.
- g. Administrative goals not student centered
- h. Lack of ag school communication
- i. No administrators with agricultural experience at my school
- j. Politicians
- k. Support from administration who are/were not vocational educators or who never taught agricultural course work.

Teacher Preparation & Certification

- a. Ag teachers must be recruited from out of state (MA) due to lack of Ag Teacher training program.
- b. Becoming licensed in MA for agriculture teachers is difficult, the guidelines are not the same as for "academic" educators making it more difficult for "agricultural teachers" even those of us with Masters degrees.
- c. Greater Boston Ag is very different from traditional Ag so finding teachers who can teach Dog Grooming etc. is difficult.
- d. Increasing number of requirements to maintain teaching license.
- e. License
- f. Licensing
- g. Licensure Certification
- h. My ag ed certification not being reciprocated

Professional Development

- a. Being expected to keep up with technology without benefit of time or training to do so.
- b. Good professional development
- c. Lack of subject area professional development
- d. Poor professional development offerings
- e. Profession development is often not aligned with what and how we teach
- f. Professional Developmental in my field
- g. Relevance of general teaching support (specific voc ag support or pdps would be more relevant and a better use of time)

Student Population

- a. Classroom size too high
- b. Different levels of learning and knowledge
- c. High number of students
- d. High percentage of special needs (70%)
- e. Meeting individual needs of all students.
- f. Teaching to a very wide range of students and abilities
- g. We are a larger inner city school with many urban youth challenges

Recruitment & Retention of Students

- a. A 9th grade program that works
- b. Public Relations for recruitment-blocked from middle schools
- c. Recruiting new students
- d. Student transportation
- e. Students who are not interested in agricultural educations, but stay at the school because it is easy
- f. Students' work ethic in physical trades has diminished over the years

Time Management

- a. Schedule-no prep time
- b. Time constraints
- c. Time management

Local Support

- a. Agr related locations for field trips
- b. Community support

Other

- a. Lack of a solid state teacher's organization.
- b. Safety concerns with equipment

New Hampshire:

Funding & Resources

- a. Budget
- b. Budget cuts
- c. Busing
- d. Cut funding at state levels
- e. Funding
- f. FUNDING \$\$!!
- g. Funding for state staff which supports the local teachers
- h. Funding Local support board support
- i. Funding of programs
- j. Funding the program
- k. Funds from state to run program
- l. Inability to take students off campus b/c liability and \$ for transportation
- m. Lack of classroom space
- n. Lack of materials needed for students
- o. State and federal funding

Recruitment & Retention of Students

- a. Competing with required classes
- b. Enrollment
- c. Enrollment
- d. Enrollment
- e. Few agricultural programs per region
- f. Hard to keep students for a couple of years
- g. Perception (still!) with some guidance counselors that ag ed/voc ed is only for non-college bound students
- h. Quality students
- i. Recruiting interested students that can fit my class in their schedule
- j. Recruiting students
- k. Schedule
- l. Scheduling conflicts

Image of Agriculture

- a. Convincing people that agriculture is still a very important part of our lives.
- b. General low interest in agriculture employment opportunities
- c. Image-students enroll in ag classes because they believe they are an ""easy"" science credit
- d. Not a vocational program
- e. Overcoming the Farmers are not important mentality
- f. The misconceptions about Agriculture in the area
- g. Vanishing agriculture land

Student Population

- a. Dumping-we typically received students who have a difficult time in the ""traditional"" classroom
- b. Inclusion-our classes consist of students with a wide range of learning abilities, behavioral issues, reading levels, etc.
- c. Student attitude toward education. Respect in today's youth, work ethics that do not exists
- d. Tendency to place low performing students in "hands on classes!"

Teacher Preparation & Certification

- a. Feeling secure in long term employment
- b. Recruiting new teachers
- c. UNH continually trying to phase out the agricultural program, sustainability, economics
- d. Work ethic is not the same - well a few of the younger ag teachers around the state are very slow to do what the state needs

Administrative Support

- a. Guidance understanding your program and supporting it and not using it as a dumping ground.
- b. Not enough support in the school for our programs, Science teachers don't think we are of any value.
- c. Support from academic teachers in school

Time Management

- a. Finding time to accomplish everything
- b. Finding time to do planning
- c. Too many teacher responsibilities, less time for FFA

Professional Development

- a. Finding continuing ed in my field

Local Support

- a. Parental support: Teacher has become a bad word.

Vermont:

Funding & Resources

- a. Adequate funding
- b. Budget constraints
- c. Budget limitations
- d. Fighting to keep a land lab for program
- e. Funding
- f. Funding
- g. Lack of funds
- h. Money
- i. Money and resources

Administrative Support

- a. Administrative support
- b. An understanding administration
- c. Communication and organization between the state ag teachers and State FFA
- d. Leadership at the state level
- e. Local center leadership (Director issued)
- f. Resistance from the sending high school counselors to send higher level students to tech school
- g. State involvement (needs to be local)
- h. Strengthen the VATA
- i. Support

Academic Requirements & Standards

- a. Aligning core standards
- b. Balancing ag ed needs against meeting no child left behind
- c. Changes mandated by government; national
- d. Constant state/national mandates
- e. Having standardized test assess student performance

Recruitment & Retention of Students

- a. Attracting kids interested in ag or natural resources
- b. Recruiting high quality students
- c. Scheduling
- d. Shrinking student body
- e. Students not able to take courses due to graduation requirements or other necessary classes that prohibit scheduling a class at the tech center

Time Management

- a. Managing schedules that are too busy
- b. Not enough preparation time

- c. Time
- d. Time
- e. Work load

FFA & Leadership Development

- a. KEEPING UP WITH FFA ORG SHILE TRYING TO DEVELOP MY PROGRAM
- b. Need to include more FFA activities in program
- c. Participation in FFA activities
- d. Time for students to participate in FFA activities

Student Population

- a. Class Numbers
- b. Students below grade level in academics
- c. Student lack of motivation / desire to learn

Teacher Preparation & Certification

- a. I am retiring and find a lack of qualified applicants

Professional Development

- a. Lack of professional development/support for curriculum

Other

- a. Distance to farms
- b. Milk prices
- c. Not having an extended contract during the summer

Maine:

Recruitment & Retention of Students

- a. Declining Student Population
- b. Lack of interest
- c. Low interest in ffa, etc: students are involved in many extracurricular activities
- d. Recruiting students
- e. Recruiting top students due to competing mandated course requirements
- f. Student enrollment

Time Management

- a. Not enough time to develop student potential
- b. Time
- c. Time constraints
- d. Time management
- e. TIME!!!!!!

Administrative Support

- a. Guidance support as to importance of program
- b. Lack of State support
- c. Lack of support among co-workers
- d. Very little backing from the school

Funding & Resources

- a. Budget constraints
- b. Space

Academic Requirements & Standards

- a. Students are taught to the test rather than educated

Image of Agriculture

- a. Maine does not place a high value on Ag ed

Professional Development

- a. Technical knowledge

Rhode Island:

Funding & Resources

- a. Budgets
- b. Diminishing financial resources
- c. Funding for the program
- d. State funding for elective type programs

Administrative Support

- a. Constant need to justify the program
- b. Convincing school and community members of the value of an ag program
- c. Lack of support or staff at State level
- d. No representation in the RI Dept. of Ed
- e. No support
- f. Our Ag Education is now based in the science curriculum/department. Hard to maintain a teaching staff certified in ag because of budget constraints. Hard to separate when unsupportive administration in control.

Teacher Preparation & Certification

- a. Finding qualified young teachers with the passion for ag ed
- b. No teacher preparation program at the State University)

Professional Development

- a. No professional development through school or at state level

Recruitment & Retention of Students

- a. Keeping numbers
- b. Very few ag programs in the state/none are similar

Time Management

- a. Proper amount of time for the program

Other

- a. Lack of curriculum
- b. Motivating students

Appendix H

Ways to Strengthen Agricultural Education in New England

Connecticut:

Increased Funding & Resources:

- a. Additional funding per student
- b. Adjustment of funding sources to align with tech and charter schools.
- c. Budget
- d. Economic support
- e. Equalize funding for agriculture programs with that of state technical high schools, magnet schools, and charter schools
- f. Fair state funding of ag ed
- g. Funding
- h. Funding
- i. Funding
- j. Funding
- k. Increase funding
- l. Increase state funding for ag-ed and make it equal to other magnet schools in our state, overall CT Ag-Ed is very strong!
- m. Increased funding
- n. Increased funding
- o. Increased funding for students in agriscience
- p. Increased funding to ag programs from state
- q. Increased State provided resources for recruitment
- r. Keeping equipment and facilities up to date and safe
- s. More buildings statewide
- t. More funding from the state for ag programs
- u. More money to update programming
- v. More secure state funding
- w. Offset cost for sending districts
- x. State funding given to students to relieve burden on towns
- y. State funding has to be re-distributed with a larger percent going to Ag programs
- z. Strong financial and regulatory support particularly at the state level

Rigorous & Relevant Curriculum:

- a. Academics are the basics of vocational education and that vocational education shows the worth of academics - you cannot have one without the other.
- b. Agriculture teachers need to all increase rigor and maintain overall quality of programs
- c. Any and all curricula should be developed before designing programs
- d. Better alignment of curriculum with standards
- e. Better national standards & state standards
- f. Clearer program objectives from administrators
- g. Curriculum and materials up to date
- h. Emphasize ag ed as an applied science area - biotechnology especially

- i. Enforce strict student performance and behavior
- j. Expand program offerings to include biotechnology and food sciences.
- k. For all Ag programs to be run the same way with the same standards so that we are all on the same page
- l. Have CDEs aligned with nationals and run that way.
- m. Have more schools with more food science programs.
- n. Have State curriculum standards, not just a draft
- o. Implementation of math and science standards
- p. Incorporate CASE
- q. Incorporating science and technology to validate agricultural education as an academically rigorous program that teaches standards in an applied setting.
- r. Increase rigor in the middle schools so basic skills (RRR) are closer to grade level entering HS.
- s. Less emphasis on CDE's
- t. Let teachers teach and get out of our way
- u. More emphasis on student character development
- v. Relevance, relevance, relevance
- w. Setup state wide training programs for students
- x. State supported curricular area acknowledgement - especially with new/developing fields/areas
- y. Too many ffa contests - this is not what ag ed is about, national ffa provides very little useful teaching materials
- z. We are ""ahead of the times"" with our integration of biotechnology classes within our curriculum, and if a student enrolls in Biotechnology as their concentration they can receive University of Connecticut transcript credits for it.

Increased local and state support:

- a. Advisory group needs to be very active
- b. Educating our local and State leaders on importance of programs
- c. Improve state and local support
- d. Legislators & community support
- e. Local Support
- f. More community support
- g. More state support
- h. More support for parents
- i. More support from the dept. of education
- j. More support from the legislators
- k. Parent group
- l. Realistic expectations from admin
- m. State assistance
- n. State leadership from Dept of Ed
- o. State support
- p. Support our program

Develop Strong Partnerships:

- a. Alumni Association at chapter levels
- b. Community connection
- c. Connecting with the local agribusinesses
- d. Continuing to build and maintain relationships with business/industry in order to help with train/prepare future employees.
- e. Developing a relationship with the state university to help us run CDE competitions.
- f. Greater interaction with industry
- g. Have non-ag teachers (industry people) run our state CDEs
- h. Help from UCONN with CDE
- i. Linking 4-h and FFA
- j. More alumni visibility
- k. More industry partnerships
- l. Stronger ties with community partners for SAE opportunities and career training.
- m. Ties to the community!
- n. Ties to the community!

Awareness of Ag Ed:

- a. "Marketing" our uniqueness
- b. Advertise what Agricultural education is (break the stereotype)
- c. Continue to promote program
- d. Get the word out! Legislative dinners, tours by stated ed people, etc., be visible with blue jackets! Good kids sell the program!
- e. Greater support/awareness of Ag Ed at local and state levels
- f. More community involvement and awareness
- g. More public awareness
- h. More public relations
- i. Public Awareness of Ag in the state needs to be implemented
- j. Showcase the diversity of our programs
- k. Showcase the relevance of our programs
- l. Showing the public what we really do
- m. Spreading the word about the program

Quality Professional Development:

- a. Conferences for sharing and developing of new ideas and curriculum.
- b. More networking/pd opportunities with-in our state
- c. More support & development for young teachers
- d. More technical professional development opportunities
- e. More training for me
- f. Prof Development
- g. Professional development
- h. Professional Development opportunities

- i. Professional development opportunities expanded to include our neighboring states, which will help with networking.
- j. Teacher continuing education
- k. Time for PD
- l. Time to collaborate with fellow agriculture teachers (teaching the same subject areas)

Improve State & Regional Ag Ed Leadership:

- a. Better organization/efficiency/attendance of state Ag teacher's association/meetings
- b. Building a stronger and more cohesive professional association that provides support and pd for its members.
- c. More cohesiveness/cooperation with state teacher association
- d. More participation from all ag teachers in the states
- e. Strong state ag teachers association
- f. Fulltime FFA Executive Secretary
- g. Improved supervision of state mandates in individual programs

Attract High Caliber Students:

- a. Believe that vocational education works for everyone
- b. Better recruiting
- c. Improving our ability to eliminate non-compliant students
- d. More minority representation in ed materials
- e. Review schedules to allow students access to AP and honors courses while remaining in the ag program.
- f. Student population

Focus on SAE & Work Experience:

- a. Internships
- b. More help with student career planning/placement

Highly Qualified Teachers:

- a. Hiring additional teachers/staff

Other:

- a. More adult education
- b. Less emphasis on ag in career choices in SAE

Massachusetts:

Rigorous & Relevant Curriculum:

- a. Completing frameworks as a whole
- b. Develop student centered goals/mission not DESE regulations as goals... use DESE as guide not
- c. disabilities, behavior issues, etc.
- d. FFA CDE's should be incorporated into the curriculum
- e. Frame works that force structure
- f. Increase technology use in labs
- g. individual school goals
- h. Longer classes and time with students
- i. More time teaching, less time state testing
- j. Promote vocational/agr. education as an educational choice rather than a place to direct students with
- k. True academic integration
- l. TRUE Ag ed should be on a decline in MA. There are few farm families and no HS graduate can purchase enough land to "farm." "Ag" ed will need to continue its transition to the quasi ag fields: horticulture, lab/bio tech, NRM, companion animals
- m. Using FFA as intracurricular program

Focus on SAE & Work Experience:

- a. A strong cooperative work program
- b. Ability to teach students professional skills that they will use in the field and not be limited by state and national regulations. Students cannot use pesticides, equipment, until they are old enough and with some students that is after they graduate.
- c. Agricultural programs that have jobs for graduates
- d. Awareness of potential employment paths
- e. Going to a more traditional vocational schedule (week on week off)
- f. Have summer work in farming and food production
- g. Job creation
- h. Let the kids work younger. Let kids work longer. Pay students community service for in school projects.
- i. More community work projects
- j. More SAE opportunities
- k. More work study and internship enrollment, and available programs
- l. Reduce State regulations on our work program we are often graduating students who have never worked a day in their life.
- m. State or national certifications in ag related fields

Increased Local & State Support:

- a. Administrative support
- b. Better support from administration

- c. Government support of local farming
- d. More community support
- e. More leaders with an agricultural education background
- f. More state support
- g. More support from Dept of Ed
- h. Public Support
- i. Support
- j. Support from College Agr.
- k. Support from State Agr Dept
- l. Support local farming
- m. We need an increase in support from the community and admin in our school

Quality Professional Development:

- a. More professional development in content areas.
- b. Collaborate across the state with other schools teaching environmental Science and Technology
- c. Send the kids home and have half day workshops
- d. Common time with other schools to share info and knowledge
- e. More emphasis on continuing education
- f. Professional development should allow us to utilize that time and money to stay updated in our field, as academics does
- g. More agricultural professional development opportunities
- h. Teacher training on FFA
- i. Summer Continuation of education
- j. Better training opportunities
- k. Sharing curriculum
- l. Animal Science teachers need experience not in livestock management but in companion animals

Awareness of Ag Ed:

- a. Public understanding of the field
- b. Community awareness
- c. More value placed on ag ed
- d. More awareness for the importance of ag ed
- e. Public awareness
- f. Awareness of importance to the community
- g. Public Knowledge of agriculture services
- h. Publicity of programs
- i. Increase awareness on the benefits of local agriculture
- j. More Recognition of Viable industry

Increased Funding & Resources:

- a. Awareness of unique costs related to ag education

- b. Better funding
- c. Funding
- d. Increased funding to state ffa and local ag programs
- e. More grants for Ag Ed
- f. More money
- g. Provide curriculum supplies-plants,soil,seeds...
- h. Public Funding

Improve State & Regional Ag Ed Leadership:

- a. An NAAE chapter within the state/and interest for one, I tried to start one however the interest didn't seem to be there
- b. Communication between the various agriculture teachers across the state.
- c. Re-developing our state ag ed association
- d. Better organization of teachers
- e. Develop state ag teacher's organization
- f. Doing more regional program events/activities

Highly Qualified Teachers:

- a. Reinstigate Ag Teacher Preparation at the University of Massachusetts
- b. Hire more teachers to reduce classroom size
- c. Higher standards for teachers regarding math and writing skills
- d. Let the trained people do their jobs.

Develop Strong Partnerships:

- a. Better relations with local farmers
- b. Community Involvement
- c. Develop stronger community partners
- d. More community involvement and collaboration with advisory board

Other:

- a. Allowing the Ag teachers to participate in Advisory Committee meetings would be great
- b. Instructors need more input in enrollment

New Hampshire:

Increased Funding & Resources:

- a. Full funding for CTE programs in the state of NH
- b. Funding
- c. Funding
- d. Funding
- e. Funding to help keep our programs going
- f. Guarantee funding for Ag Ed
- g. It is the economy.
- h. More money
- i. More money
- j. Perkins
- k. Reduce Funding cuts to our areas
- l. State budget has been cut so has the CTC budget. It will be difficult.

Awareness of Ag Ed:

- a. Continued public relations
- b. Generate respect within school community for Ag.
- c. More awareness and support
- d. More recognition of the importance of Ag Ed in New England.
- e. Overall better appreciation for agriculture
- f. Publicity for program to increase community favor and connections
- g. Recognition

Increased local and state support:

- a. Land protection legislation
- b. Legislative support
- c. More college involvement
- d. More support from the schools.
- e. Training/education of guidance about the importance of voc ed for any student

Attract High Caliber Students:

- a. Enrollment
- b. Marketing to students
- c. Open it to younger students not just juniors and seniors, If I were there one more year I would have created additional tracts in equine veterinary science and animal exploratory
- d. Program availability

Quality Professional Development:

- a. Continued networking and training with other teachers of similar program
- b. More continuing ed

- c. Professional development specific to agricultural education

Develop Strong Partnerships:

- a. Community input
- b. Have more partnerships with ag businesses
- c. Industry partnerships

Rigorous & Relevant Curriculum:

- a. Give math and science credits for applicable agricultural classes
- b. If colleges valued our curriculum and accepted our classes as a science credit.
- c. Science credit granted

Improve State & Regional Ag Ed Leadership:

- a. Active state alumni association
- b. Reinstating a state advisor

Focus on SAE & Work Experience:

- a. Career opportunities available and which area of study.
- b. Internship/job sites for local students

Highly Qualified Teachers:

- a. More desire in younger teachers
- b. Reinstate agriculture teacher education at the state university

Vermont:

Improve State & Regional Ag Ed Leadership:

- a. Ag education representation and leadership at the state dept of ed
- b. Better leadership at the State FFA level
- c. Bring back the state position for an Ag Educ advisor who is qualified and effective with the legislature
- d. Coordination among the supervisory unions on schedules, requirements, testing, bussing issues and credits.
- e. Develop a system that encourages / makes teachers want to be a part of the state ag teachers association
- f. Directors need to initiate ag programs, we only have a few in the state
- g. Have a fulltime effective state advisor
- h. Leadership from state
- i. Our FFA from the state down needs to be strengthened, reorganized and re-invented
- j. State/regional initiatives

Increased Funding & Resources:

- a. Better access to technology
- b. Budgets that will support keeping up with new technologies
- c. Funding
- d. Money
- e. More resources
- f. Provide more \$\$ for Ag Programs

Quality Professional Development:

- a. Better coordination of ffa with new teachers to set up programs that utilize ffa, sae, cde and curriculum info
- b. More collaboration among ag educators
- c. More time for ag teachers to all meet
- d. Professional development time for Ag teachers to meet and plan
- e. Provide professional development in ag related fields

Rigorous & Relevant Curriculum

- a. Align state core standards
- b. Common curriculum
- c. Have greater contact time with students earlier in their education
- d. Needs to be more than a one year program
- e. We need to find ways to balance the needs of ag ed against the needs to have our students have high necap scores

Highly Qualified Teachers:

- a. Instructors with FFA experience

- b. Properly prepared instructors
- c. Properly/adequately trained professionally attached ag. Instructors
- d. Quality energetic Teachers with farm background
- e. Strong FFA advisors

Develop Strong Partnerships:

- a. Greater connections between Agricultural organizations.
- b. Industry support
- c. More public projects

Attract High Caliber Students:

- a. We need to have top quality students
- b. Continued interest

Increased Local and State Support:

- a. Support

Awareness of Ag Ed:

- a. Campaign to promote Ag. Ed. on local, state & national levels

Other:

- a. Allow teacher to assess based on students learning style
- b. Stop making teachers change / redo programs & curriculum every 2-3 years

Maine:

Rigorous & Relevant Curriculum:

- a. Expanding agriculture programs
- b. FFA magnet school!
- c. Have actual Ag classes at the high school
- d. If you have ag you must have FFA
- e. Incorporate ag ed into other ???
- f. Integrating post-secondary programs with high school programs
- g. More hands-on (doing to learn)
- h. More student involvement.

Awareness of Ag Ed:

- a. Importance of agriculture/education be stressed at all levels
- b. More community awareness of existing programs
- c. Promote agriculture

Increased Funding & Resources:

- a. Higher funding
- b. State funding with state mandates to receive this money

Quality Professional Development:

- a. More local workshops
- b. Networking

Develop Strong Partnerships:

- a. Continued coordination with coop extension at state level
- b. Experts I can call on (especially for organic implementation - our campus can only use certified organic practices)

Increased Local and State Support:

- a. Strong local support

Highly Qualified Teachers:

- a. Agricultural Education Endorsement

Improve State & Regional Ag Ed Leadership:

- a. State Advisor who is full time

Rhode Island:

Highly Qualified Teachers:

- a. Ag teacher certification program at college
- b. Local ag teacher preparation program
- c. Re institute vocational ag certification for ag teachers

Improve State & Regional Ag Ed Leadership:

- a. Add a state supervisor for Ag Education
- b. Funding for state ag education extension person
- c. Network (regional) of ag educators

Increased Funding & Resources:

- a. Additional funding/ changes in current school funding legislature
- b. Establishing new programs
- c. Funding specified to ag education

Quality Professional Development:

- a. Affordable PD

Increased Local and State Support:

- a. Require State Dept. of Ed to support ag education comprehensive high schools

Rigorous & Relevant Curriculum:

- a. Uniform curriculum

Focus on SAE & Work Experience:

- a. Increase participation in career development

Other:

- a. Not sure that it is sustainable in RI

Appendix I

Additional Survey Comments from Respondents

- All ag teachers should be science certified to maintain education standards and justify program
- Also had to complete requirements for state of MA - they would not accept my master's degree from UNH.
- Competency of the teacher or the student. The students lack of hands on work experience, work ethics and lack of basic skills. I find that education is starting from a lower point then 20 plus years ago. Basic writing and math skills are lower. The state has the students at a certain level of expectation, I believe a 1/3 of the population is not up to the same standards of the State Expectation. I would believe they are as much as 3-5 years behind the States expected level of ability. This is backed and supported by state test scores.
- FFA needs to have a mentor program or a new teacher training to explain chapters, sae, cde, etc. I have been an ag teacher for 7 years and am still confused cause I am so busy developing my program and teaching.
- I am in the process of completing the teacher certification program. The tests have nothing to do with what I am teaching. What makes it worse is the fact that the preparation material and the feedback which is given is utterly worthless. Both sets of information are devoid of anything which is useable or helpful in any way. The people implementing the exam are just as helpful. The whole process is extremely frustrating!
- I filled in for 2 months as advisor everything done was approved by the vocational director. I do not have a curriculum to go by.
- I only teach a 1 block section of applied botany. The rest of my schedule is typical science courses in a high school. We have a 60 tree orchard, expanding gardens, composing for the school and a greenhouse that rotates fall greens production and winter/spring production for a plant sale to support expansion of the program.
- I still love teaching ag after 28 years!
- I'm not sure if we are aligned to CASE - but that was not an option.
- In CT we have 3 levels of certification: Initial Educator Certificate (3 year duration), Provisional Educator Certificate (8 year duration), and Professional Educator Certificate (5 year duration).
- It is challenging to be an ag teacher in today's downsized economy and higher expectations from administrators, the public and the federal govt. It is becoming more stressful.
- Many young teachers today do not want to do their part; They continue to expect those with experience to do the work.
- Mass needs to get their act together re: lic. Ag teachers before there aren't any.
- My ag-ed program is the only non-state funded program in the state. We are locally funded and operated.
- My comments are not directed to the survey, but Vermont Ag. Ed. in general. The VATA, Vt. FFA, etc. all started to decline when funding at the state level was reduced because of budget restraints. This did away with a state personnel that coordinated the activities necessary to continue with a strong state ag. program.

- My work experience is what qualified me for this teaching position and the Master's in education, of course.
- No options here for natural resources mgt. - that's what I teach. I answered using "agriculture" as a stand-in for natural resources mgt. when answering the above questions.
- Not 100% sure about the curriculum ones I marked as NO alignment
- Not everyone involved with teaching today's youth have a college degree.
- Not many surveys geared to pretend teachers like myself. Education needs more practically experienced people and less theoretical.
- Our program called horticulture is a science course (Applied Botany) integrating core curricula of both
- Professional development at my school is not focused on agriculture.
- Teachers are not allowed to talk participate in Advisory Committee meetings.
- Teachers are not invited to advisory board meetings, so we constantly struggle to keep programs up to date.
- Teachers do not interact with advisory committee
- The biggest problem is that the average farmer's age is around 55...who is going to grow the food in the future? The kids do not know what "Real Food" is...they have been raised on processed food and consequently are overmedicated due to adverse reactions to all the chemicals they consume.
- The erosion of state support staff combined with the loss of state ag. ed training has been manifested in watered-down local ag. programs; thus less than prime ag. ed. for our rural youth. All resulting from budget considerations in our New England states.
- The state of RI currently issues certification in ag education. However, one of the requirements is that you complete a course in ag mechanics which is not offered at any RI college or university. This is making it difficult to certify new teachers
- WE are not allowed to visit students' homes/work
- We can't recruit.
- We follow the Frameworks by the state of MA
- We have site based SAE
- We need to continue to grow in this area of education.