This is to certify that the
dissertation entitled

AN EMPIRICAL ASSESSMENT
OF MICHIGAN SECONDARY AGRICULTURAL
EDUCATOR PERCEPTIONS OF THE
TEACHING PROFESSION

presented by

Jeffry D. Hawes

has been accepted towards fulfillment
of the requirements for the

Doctoral degree in Agriculture & Extension Education

Major Professor's Signature

Aug 24, 2004

Date

MSU is an Affirmative Action/Equal Opportunity Institution

DATE DUE	DATE DUE	DATE DUE

AN EMPIRICAL ASSESSMENT OF MICHIGAN SECONDARY AGRICULTURAL EDUCATOR PERCEPTIONS OF THE TEACHING PROFESSION

By

Jeffry D. Hawes

A DISSERTATION

submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Agriculture & Natural Resources
Education and Communication Systems

2004

ABSTRACT

AN EMPIRICAL ASSESSMENT OF MICHIGAN SECONDARY AGRICULTURAL EDUCATOR PERCEPTIONS OF THE TEACHING PROFESSION

By

Jeffry D. Hawes

The 2003 Michigan Association of Agriscience Education (MAAE) Strategic Plan noted, "Districts with an ANRE program have faced a shortage of teachers for a number of years. In fourteen of the last fifteen years, the supply of individuals holding a secondary teaching certificate with vocational authorization has not met the demand. Fifty-one programs have closed in the past fifteen years due in the large part to the lack of teachers to fill vacancies, and numerous school districts have had to fill programs without provisional teaching certificates" (Michigan Association of Agriscience Education Strategic Plan, 2003).

This study investigated a variety of factors that may ultimately define the success or failure of an Agriscience teacher in Michigan. In particular, this study focused on stress indicators and sought to correlate the factors that may be attributed to low teacher retention with demographics and a variety of internal and external factors to the Agriscience teaching profession.

Findings indicated that MAAE teachers desire to make a positive difference as a major motivating factor for pursuing a career in education. Moreover, a majority of the MAAE teachers supported the tripartite mission of the agricultural education program that is based on the traditional model of preparing students for a future career in the agricultural industry by knowledge development through 1) classroom instruction,

2) skill development through supervised agricultural experience programs and

3) leadership development through the FFA organization.

Overall, Michigan Agriscience teachers reported high levels of job satisfaction, overall frustration with a myriad of internal and external job characteristics. The single greatest time commitment for Michigan Agriscience teachers was dedicated to their regular teaching assignment averaging 20-24 hours per week. The second greatest time commitment was in the area of preparation for teaching assignments averaging 8-12 hours per week.

The MAAE teachers identified both intrinsic and extrinsic factors as serving as sources of stress. The intrinsic factors that received high responses as sources of stress were institutional procedures, teaching load, FFA demands, and students. The study identified other intrinsic factors that result in stress to a lesser degree. Those factors include colleagues, committee work, faculty meetings, review and promotion, and subtle discrimination.

A majority of MAAE teachers indicated that they would still choose to pursue a career in the field of education, while nearly 10 percent said they would not. Nearly half of the MAAE teachers also reported that they had considered leaving their current position for a non-teaching job.

DEDICATION

This dissertation is dedicated to my devoted wife Katherine, daughter Lauren and son Michael for their love, support and patience. To my supportive parents Bill and Jan Hawes, thank you for teaching me the value of hard-work and the importance of a God centered life.

ACKNOWLEDGEMENTS

First and foremost, I must thank my major professor, Dr. Michael Woods, for his assistance with this dissertation and for the guidance he provided me throughout my doctoral program. He gave me personal encouragement and challenged me to the next level through every step of my doctoral program.

I would also like to thank my Doctoral Committee, Dr. Randy Showerman, Dr. Dave Krueger and Dr. Delbert Mokma for their assistance, support and guidance throughout the entire dissertation process.

I also owe Kara and Kendra Butters an enormous debt of gratitude for their continued support throughout my doctoral program. Also, to my friends and co-workers, I would like to extend my appreciation for your friendship and fellowship that made my time here at Michigan State University enjoyable and prosperous.

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

GLOSSARY

To assist in a clear understanding of this study, the following terms that are used in the Agriscience Education profession have been defined.

Agricultural Education: Term synonymous with Agriscience Education in Michigan.

Agriscience Education: The discipline dedicated to the formal education in Michigan about agriculture and natural resources.

Agriscience Education Program: A formal educational program authorized by the Michigan Department of Education to provide education about agriculture and natural resources.

Agriscience Educator: A certified profession that is licensed to teach Agriscience education in a secondary school district or career & technical center in Michigan.

Annual Yearly Progress: Key cornerstone of the No Child Left Behind Act that serves as a measure of year to year student achievement on the Michigan Education Assessment Program.

Future Farmers of America: An intra-curricular student leadership organization that is an integral component of an Agriscience Education program.

Highly Qualified Teacher: A specific term defined by the No Child Left Behind Act that requires teachers by to hold a bachelor's degree, hold full state certification, demonstrate subject matter competency in the core academic subjects that the teacher teaches.

No Child Left Behind Act of 2001: Public act designed to improve student achievement and change the culture of schools through the re-authorization of the Secondary and Elementary congressional act.

Teacher Attrition: A gradual, natural reduction in membership or personnel actively employed in the agricultural education profession, as through retirement, resignation, or death.

Teacher Recruitment: To action of adding to individuals to the agricultural education profession.

Teacher Retention: Power to keep individuals employed in the agricultural education profession.

Teacher Shortage: Amount or extent of deficiency of qualified and certified individuals to enter the agricultural education teaching profession.

CHAPTER I

INTRODUCTION

1.1 A Challenge for Education

On February 27th 2001, George W. Bush during his State of the Union address stated, "When it comes to our schools, dollars alone do not always make the difference. Funding is important and so is reform. So we must tie funding to higher standards and accountability for results" (White House, 2004). Following his commitment to reform, on January 8, 2002, President Bush signed the No Child Left Behind (NCLB) Act that has challenged the American educational system to embrace reform by seeking stronger accountability for results, more freedom for states and communities and encouraging proven educational methods (United States Department of Education, 2003). Along with this reform is a challenge for education to prepare and provide a highly qualified workforce that is prepared to meet the challenges in education for the 21st Century (Paige, 2002).

Acting on President Bush's charge to "Leave No Child Behind" in 2003, Secretary of Education Ron Paige released the second annual report entitled *Meeting the Highly Qualified Teacher Challenge: The Secretary's Second Annual Report on Teacher Quality.* In this report, Secretary Paige noted, "One of the most important provisions of the No Child Left Behind Act is a requirement that by the end of school year 2005-2006, all teachers of core academic subjects must be highly qualified. This nation has many great teachers, but not nearly enough" (Paige, 2003).

For years there has been a general conviction among the educational community, researchers and policy makers that teacher quality is instrumental to quality instruction in school systems (Darling-Hammond, & Young, 2002; Decker, Glazerman, & Mayer, 2004). The National Commission on Excellence in Education (1983) recorded concerns over a highly qualified teacher workforce over two decades ago by stating, "The commission found that not enough of the academically able students are being attracted to teaching; that teacher preparation programs need substantial improvement; that the professional working life of teachers is on the whole unacceptable; and that a serious shortage of teachers exists in key fields".

Teacher shortages are an issue that has received a great deal of attention as being a major concern to the field of education in the United States and has subsequently sparked much debate (National Education Association, 2002). In 2002, the National Education Association reported, "A historic turnover is taking place in the teaching profession. While student enrollments are rising rapidly, more than a million veteran teachers are nearing retirement. Experts predict that overall we will need more than 2 million new teachers in the next decade".

Several studies by Camp (2000; 2002), National Center for Educational Statistics (2002) and North Central Regional Educational Laboratory (2004) have reported varying levels of shortages and surpluses in teacher supply and demand in the United States. In 2002, the American Association for Employment in Education reported that, "Shortages of educators are evident throughout the country, with variations depending upon each field and discipline surveyed, the distinct regions of

the United States, differences among urban rural, and suburban school systems, and the demographical characteristics of both students and educators" (p. 3).

The approach to evaluating teacher shortages is critical to obtaining useful and pertinent information for guiding and steering policy as it relates to teacher preparation programs (North Central Regional Educational Laboratory, 2004). In 2004, the North Central Regional Educational Laboratory reported, "Most national studies on teacher supply and demand conclude that, nationally, there is an overabundance of teachers, but shortages are showing up in certain curriculum areas and in certain geographic areas" (p. 4). It is necessary to evaluate the research approach before accepting any claim on teacher shortages or surpluses (North Central Regional Laboratory, 2004). For example, a surplus of teachers appears to be evident when presented with standardized data from the Bureau of Labor and Statistics that indicates annual openings for teachers are less than half of the expected education graduates identified by the Integrated Postsecondary Education Data System. When comparing data, one must include factors such as willingness of potential teachers to relocate, attrition rates from retirement and teachers leaving the profession.

Traditionally, the Midwest has been a net-exporter of teacher due to the fact that it trains more teachers than available positions, yet this trend has been changing in recent years. Recent studies indicate that while it is probably still true that the Midwest region still continues to produce a greater number of teachers than it needs, shortages have already begun to show up in certain areas and geographic locations (North Central Regional Educational Laboratory, 2004).

Even though it is unclear how specific a teacher shortage is, it is evident that there are significant areas of shortages for specific curriculum areas. In 2000, the American Association for Employment in Education released a research report that evaluated educator supply and demand in the United States. According to the American Association for Employment in Education (2000), "There are significant shortages in the supply of K-12 teachers and administrators. These shortages are most evident in special education, math, science and ESL/bilingual fields and disciplines. However, nearly all of the 67 fields are either in a balance or shortage situation" (p. 13).

Agricultural education was identified as a field with shortages of teachers. As noted in Table 1, Agricultural Education was perceived by faculty to have moderate levels of teacher shortages (American Association for Employment in Education, 2000). Historically, the concern of teacher shortages is not a new problem for the field of agricultural education as noted by Camp (2002). The number of newly qualified potential teachers of agriculture fell from 1,749 in 1977 to 643 in 1994 and during that same period Camp (2002) reported that the placement rates for the smaller number of graduates also declined (p. 5).

In light of the fact that the field education has witnessed teacher shortages, concern arises on the impact that the "No Child Left Behind" will have on certifying teachers to meet the void (Darling-Hammond, & Young, 2002). The No Child Left Behind Act has placed a tremendous challenge in front of the educational community to strengthen their accountability systems and identify research based strategies for improving student achievement by recruiting the best and brightest teachers. This

comes at a period in the American educational system where shortages of highly qualified teachers are apparent in key teacher fields. Camp (2002), contended that sound recruitment and retention strategies in a period where certain fields are having difficulty ensuring that a teacher is even available for their current positions.

Table 1
Relative Demand by Field as Identified by the Association for American Employment in Education.

Condiserable Shortage	Some Shortage	Balanced Supply
Emotional Behavioral Disorders	Early Childhood Special Ed.	Music-General
Multicategorical	English as a second language	School Nurse
Seveer/Profound Disabilities	Technology Education	Languages-Classics
Learning Disability	Languages-Spanish	Speech Education
Mild/Moderate Disabilities	Earth/Physical	Human Resources
Mathematics Education	Biology	Physical therapist
Mental Retardation	Speech Pathologist	English/Language Arts
Physics	General Science	Languages-German
Bilingual Educatioin	Superintendent	Business Manager
Visually Impaired	Library/Media Specialist	Business Education
Hearing Impaired	High School Principal	Elementary-Intermediate
Chemistry	Middle School Principal	Elementary-Pre-Kind
Computer Science Education	Audiologist	Occupational Therapist
Dual Certificate	Elementary Principle	Elementary-Kindergarten
	School Psychologist	Elementary Primary
	Counselor	Journalism Education
	Gifted/Talented Education	Art/Visual Education
	Music-Instrumental	Driver Education
	Home Economics/Consumer Science	Dance Education
	Languages-Japanese	Theatre Education
	Reading	Theatre/Drama
	Music-Vocal	Social Studies Education
	School Social Worker	Physical Education
	Agriculture	Health Education
	Language-French	

Recent studies (American Association for Employment in Education, 2000; National Association for Agriscience Educators, 2002) have also identified higher than average attrition rates for new and beginning teachers. The Ohio Department of Education reported that only 66% of teachers were teaching ten years later (Ohio Department of Education, 2000). More alarming is the fact that principals in Minnesota by a 5 to 1 margin said that the teachers leaving the profession were more effective teachers in the district (Hare & Nathan, 1999).

1.2 Need for the Study

Camp (2000; 2002) has concluded that various factors impact the successful recruitment and retention for K-12 educators. However, studies that evaluate the reason why teachers choose to do what they do and evaluate what factors that may alter the individual's decision to stay in the teaching profession are lacking. Thus, as the North Central Regional Laboratory (2004) noted, there is a need for further evaluation of the factors that affect one's decision to pursue K-12 teaching as a career and to assess the factors that may alter their respective decision to remain employed in the teaching profession.

1.3 Statement of the Problem

To address the challenges facing agricultural education as it relates to maintaining a highly qualified teacher workforce, education leaders within the profession must start defining the problem and identifying solutions to address the teacher shortages (Camp, 2002). This in and of itself will create new challenges for education at the post-

secondary level where educational leaders must find new models for teacher recruitment and preparation that can be implemented as a management tool that will allow them to meet the future needs of certifying the highly qualified teacher.

As noted by the MAAE Strategic Plan (2002), agricultural education in Michigan has endured a period of high attrition rates coupled with high teacher turn over for new and beginning teachers in local programs. The combination of the two factors has created a turn over ratio that if endured for long periods may reduce the quality and number of sites where Agriscience education programs are potentially offered (MAAE Strategic Plan, 2002). Research has also indicated that retention of agricultural education teachers across the country is affected by their respective feelings of job satisfaction (Cano and Miller, 1992). Moreover, Jarvis (2002) noted that stress and burnout is closely associated with the low retention and high attrition rates of agricultural education teachers.

1.4 Purpose Statement

In an effort to address the call placed by Camp (2002) to engage the profession's leadership to identify solutions that lead to resolving the teacher shortages, the purpose of this study was to collect baseline data that will provide insight into the factors, both intrinsic and extrinsic to the school system that may affect their commitment to education as a career choice. Moreover, this study provides descriptive data for assessing teacher perceptions that can be associated with factors that result in stress that may lead to higher attrition rates. This study provides descriptive data on demographics, stress indicators and reasons for entering the teaching profession.

Specifically, in an effort to identify factors that lead to higher attrition of new and beginning teachers, this study focused on sources of stress that are related to the teaching profession, the potential impact that may be associated with assessing why an individual would choose to become an Agriscience education teacher and whether these issues share commonalities or significant correlation to the demographical background of an increasing diverse agricultural education teacher population.

1.5 Research Questions

To achieve the aforementioned research purpose the following research questions guided this study:

1) Is there a clear sense of what factors led Michigan Agriscience teachers to pursue a career in Agriscience education?
2) What components of the tripartite mission of agricultural education interest the Michigan Agriscience teachers?
3) Where do Michigan Agriscience teachers commit their time in the management of an ANRE program?
4) What types of activities related to education are Michigan Agriscience teachers committed to beyond their teaching assignment?
5) What types of attributes do Michigan Agriscience teachers consider of importance?
6) To what extent due intrinsic and extrinsic factors serve as sources of stress for Michigan Agriscience teachers?
7) Do the experiences of Michigan Agriscience teachers influence their decision to remain employed in the educational field?

1.6 Significance of the Study

This study provides baseline data to assess what factors either retain or inhibit an Agriscience teacher within the profession. It is hypothesized that by identifying factors that are rewarding or unconstructive to Agriscience teachers will help provide insight that can be utilized in advancing the preparation and training of Agriscience educators.

1.7 Limitations of the Study

The research will assume the results obtained from the Michigan Agriscience teacher is a valid and accurate portrayal of their perceptions related to the questions under investigation. The process of collecting data on the thoughts and perceptions of human beings and the researcher assumes that an individual's perceptions are consistent if the instrument was distributed on a different day.

1.8 Summary

This study presents descriptive statistics on factors that are associated with the teaching profession for Michigan Agriscience teachers. The goal was to provide base line data to analyze the perceptions of teachers regarding the aforementioned research questions. The subsequent chapters review related literature that aided in the development of the conceptual and theoretical framework for this study (chapter 2); outlines the methodology and research design of this study (chapter 3); presents the findings of the study (chapter 4); and presents conclusions and recommendations that may aid in the retention of Michigan Agriscience educators (chapter 5).

CHAPTER 2

REVIEW OF LITERATRE

2.1 Introduction

This chapter contains a review of literature that is pertinent to understanding of the field of agricultural education and the inherent factors related to the work-life of Michigan Agriscience teachers. Specifically, this chapter will outline the key research and literature that are associated with 1) teacher satisfaction; 2) teacher stress; and 3) teacher burnout as it relates to the recruitment, training and retention a highly qualified workforce of agricultural education teachers. Specifically, chapter two outlines the theoretical underpinnings needed to understand the aforementioned factors are associated with the following research questions:

1) Is there a clear sense of what factors led Michigan Agriscience teachers to pursue a career in education?
2) What components of the tripartite mission of agricultural education interest the Michigan Agriscience teachers the most?
3) Where do Michigan Agriscience teachers commit their time in the management of an ANRE program?
4) What types of activities related to education are Michigan Agriscience teachers committed to beyond their teaching assignment?
5) What types of attributes do Michigan Agriscience teachers consider of importance?

6) To what extent due intrinsic and extrinsic factors serve as sources of stress for Michigan Agriscience teachers?
7) Do the experiences of Michigan Agriscience teachers influence their decision to remain employed in the educational field?

2.2 Historical Perspective on the establishment of Agricultural Education

Early in America's history, the concept of agricultural education was prevalent in the American educational system. Herren and Hillison (1996) noted, "Agricultural Education has had a close working relationship with land-grant universities since they were started in 1862" (p. 1). The early agricultural education programs at the secondary level were established as part of the common school movement under Horace Mann, Massachusetts's Secretary of Education. Mann's belief in a state funded, compulsory and universal system built the foundation for modern agricultural education programs to exist.

In 1917, agricultural education programs, formerly known as vocational agriculture, were formally established at the federal level in the public educational school system across the United States through the Smith-Hughes Act. The Smith-Hughes act was derived from a joint commission established by President Woodrow Wilson. The commission was charged to investigate the idea of national aide to vocational education in the United States (Smith, 1999). The commission emphasized the need for vocational training based on numbers cited from the 1910 census that indicated that over 12,000,000 million persons in the United States were involved in agriculture and over 14,000,000 million persons involved in manufacturing and mechanical pursuits for which there was no training (Smith, 1999). The adoption of the Smith-Hughes Act established vocational

training as an integral component of the American educational system and was intended to meet the need of a well-trained workforce to engage productively in a changing industrial and agricultural base (Smith, 1999).

At the time of the adoption of the Smith-Hughes Act, the concept of experiential education was not a driving force of the pedagogy of the traditional school that focused primarily on intellectual thought and strict memorization (Dewey, 1956). A major contributor to supporting the agricultural education movement was John Dewey's work on the concept of experiential education. Though Dewey was not the forerunner in pragmatizing such an educational venture, he was instrumental in providing the philosophical basis by which the case could be made for experiential education in general. Dewey (1938) noted, "The logical outcome is a new philosophy of experience and knowledge, a philosophy which no longer puts experience in opposition to rational knowledge and explanation. Experience is no longer a mere summarizing of what has been done in a more or less chance way in the past; it is a deliberate control of what is done with reference to making what happens to us and what we do to things as fertile as possible of suggestions (of suggested meanings) and a means for trying out the validity of the suggestions" (pp5-6).

The concept of experiential education and the work of John Dewey served as a philosophical basis for promoting agricultural education as the United State entered the 20th Century. The initiative through the Smith-Hughes Act to implement agricultural education programming to prepare the future agricultural workforce created a need for highly skilled teachers.

2.3 Adoption of Formalized Agricultural Education Teacher Training Program

Like the concept of agricultural education, the concept of teacher training for the field of agricultural education has been on an evolving and changing path. From the earliest state-funded programs, agricultural education has had a close working relationship with land-grant universities in preparing teachers. This relationship between agricultural education and the land-grant universities pre-dates the adoption of the Smith-Hughes Act by the United States congress (Herren & Hillison, 1996). In 1862, the Morrill Act established the land-grant university system and ties immediately began to emerge with existing agricultural education programs (Herren & Hillison, 1996).

The Smith-Hughes Act further established formal training of teachers to serve in the agricultural education programs (Herren & Hillison, 1996). However, the philosophy of experiential training was short-lived on the basis that knowing how to perform a skill did not predispose one's ability to transfer that skill to the student. Since the act did not specify at what type of institution that the teacher training must occur, both land-grant institutions and common normal schools provided teacher training opportunities. This led to the inclusion of agricultural education teacher training into the four-year institutions requiring training to become a certified teacher. Even though agricultural education teacher training has a long history, the profession has had difficulty ensuring that there is an adequate supply of highly qualified teachers with the appropriate certification and skills to teach in the profession (Camp, 2002). The Michigan Association of Agriscience Educators (2003) noted, "Perhaps the most critical components needed in order to have quality Agriscience and Natural Resources Education (ANRE) programs is an adequate cadre of quality teachers."

2.4 Recruitment and Training of Agricultural Education Teachers

During the 20th Century, the industry of agriculture had witnessed major technical and industrial change that supported the need for the aforementioned vocational training to prepare the future workforce (Smith, 1999). Conroy, Dailey and Shelley-Tolbert (2003) noted, "Vocational agriculture programs trained the workforce for agriculture and helped the United States to become the leader in world food production. Advancements in technology and increased efficiency in agriculture production, however, led to changes in workforce dynamics. These factors changed the infrastructure and the types of workers who would be in demand" (p. 51). The establishment of vocational agriculture programs had created a need for highly skilled teachers to train young people for the industry of their day.

Today, the need for highly skilled teachers remains as the field of agricultural education has changed from vocational based to a science-based curriculum. To meet the needs of the industry, the 21st century agriculture education program is committed to expanding curriculum for science training and other issues that are impacting the agricultural industry. In 1988, The National Research Council published a report that called for the need for student understanding of basic science concepts and that agricultural education should be an instrumental player in that process. This spurred the development of the Agriscience movement in Michigan and across the country to develop curriculum that is science-based. This demand for a science-based curricula has created a continued demand to develop an Agriscience teacher certification program that is relevant to the needs of a changing industry.

The increase demand on schools to ensure that every teacher is not only certified but qualified in their respective subject areas that they teach will increase the pressure on preparing agricultural education students. This becomes a pressing concern to small districts that hire agricultural education teachers to teach curricula outside of their certified area (Camp, 2000).

The reauthorization of the Elementary and Secondary Education Act or more prominently known as the No Child Left Behind Act has new provisions that may negatively impact the teachers and support staff across the United States (National Education Association, 1999). Accordingly, by the end of the 2005-2006 school years, school districts must verify that all teachers working in a district that receives title I money are classified as highly qualified. To all new and beginning teachers the following definition must be fulfilled according to Paige (2002):

> "A middle or secondary school teacher who is new to the profession, means that the teacher holds at least a bachelor's degree and has demonstrated a high level of competency in each of the academic subjects in which the teacher teaches: (I) passing a rigorous State academic subject test in each of the academic subjects in which the teacher teaches (which may consist of a passing level of performance on a State-required certification or licensing test or tests in each of the academic subjects in which the teacher teaches); or (II) successful completion, in each of the academic subjects in which the teacher teaches, of an academic major, a graduate degree, coursework

equivalent to an undergraduate academic major, or advanced certification or credentialing." (Paige, 2002)

In the wake of a major concern for teacher shortages, the No Child Left Behind Act has raised the bar for teacher quality standards. The No Child Left Behind Act evaluates teacher quality as part of the Adequate Yearly Progress provision whereby school districts are evaluated on whether all teachers in core academic areas are classified as 'highly qualified'. This would include all subjects that teach English, reading, language arts, mathematics, geography, economics, the arts and foreign language.

This No Child Left Behind Act has sent reverberations through the educational communities. This is primarily due to three reasons: 1) this act has placed increased pressure on teacher preparation programs at post-secondary institutions to certifying a quality teacher workforce; 2) this act has placed pressure on local districts to locate only fully certified teachers; 3) this act has placed pressure on current teacher to achieve a highly qualified status by the end of the school year in 2006.

The National Commission on Teaching and America's Future (2002) reported that the teacher supply shortage can only be solved when the teacher attrition rate is reduced and that high quality teacher preparation is a strong predictor of teacher retention. Quality teacher preparation provides new teachers with the skills, confidence and competence to begin their teaching careers. Teacher licensure should validate that teachers who enter the classroom are highly qualified to be there (National Commission on Teaching and America's Future, 2002). The commission also indicated that schools actually have more difficulty retaining teachers than recruiting teachers (National Commission on Teaching and America's Future, 2002). However, the pressures of an ever-changing and expanding

global economy have placed increased demands on teacher training programs at the post-secondary level. One of the most important challenges facing colleges of agriculture today involves recruiting, retaining, and educating high caliber individuals who are academically prepared to function in a rapidly changing food, fiber and natural resources industry (Ball, Dyer & Ganton, 2000). Student's academic performance and their continued enrollment are a concern for universities and their respective colleges (Dyer, Garton & King, 2000).

2.5 The Impact of Teacher Attrition and Retention

Teacher attrition rates reported in national and state studies have varied widely, however, certain fields have been found to be consistently higher than general education. (Gonzalez, 1995). The field of agricultural education has experienced higher than normal attrition rates over the past two decades (Camp, 2002). Bennett, Edwards, Iverson, Langone and Rows (1990) noted, "It is important for the Agricultural Education community in the state of Georgia and nationally to understand better the reasons for which teachers of agriculture leave the profession prior to retirement. Moreover, over the past two decades, numerous studies have evaluated and identified different factors that are believed to affect teacher retention rates". Reasons for higher attrition rates are not well understood. However, several studies have indicated that stress and burnout greatly impacts the teacher retention rates (Brown, 1999; Carter, 1994; Jarvis, 2002).

2.6 The Role of Stress and Burnout in a Teacher's Life

A teaching career can be extremely rewarding, but can also be extremely demanding. The field of education has been identified as a highly stressful occupation in several studies over the past decade (Brown, 1999; Jarvis, 1999; Jacob & Place, 2001; Swortzel, 1999; Schmitz, Schawarzer, Tang & Tung, 2001). Stress is a phenomenon that is closely associated with a range of causal factors, both intrinsic and extrinsic to the teaching profession (Jarvis, 1999). Merriam- Webster (2004) defines stress as "a mentally or emotionally disruptive or upsetting condition occurring in response to adverse external influences and capable of affecting physical health, usually characterized by increased heart rate, a rise in blood pressure, muscular tension, irritability and depression". Linde (2000), categorized stress as either pleasant or unpleasant, pending a variety of factors. Pleasant stress will tend to lead to productive activity, whereas unpleasant stress will lead to emotional exhaustion (See Figure 1).

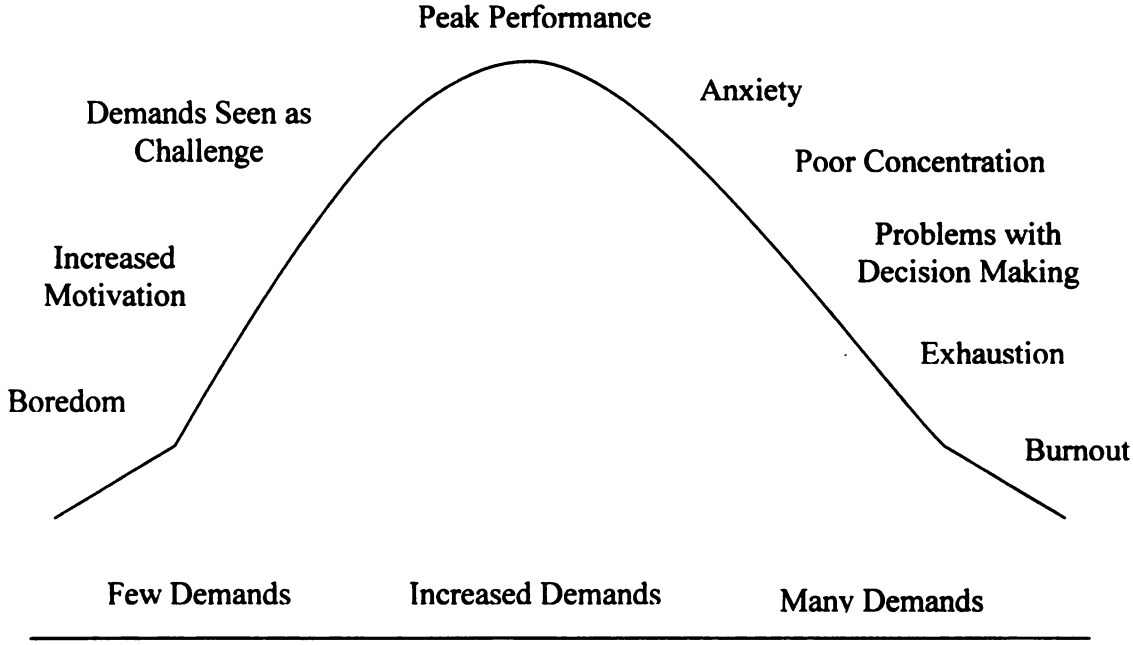

Figure 1: Hebb's Theory on Eustress and Distress (Linde, 2000)

Whether stress is perceived as pleasant or unpleasant is defined by the level of demands placed on an individual. According to the Hebb's model, pleasant stress will tend to be seen as a challenge as long as there are few demands to moderate demand; whereas, excessive demands will allow stress to have negative impact both emotionally and physically. Hebb's model has been substantiated by work that identified unproductive levels of stress as harmful to teachers that can affect their teaching, personal lives and their respective students (Jarvis, 1999; Schmitz, Schwarzer, Tang, & Tung, 2001). Jarvis (1999) noted, "Many of the frustrations and pressures we experience in our social, personal, and work lives cause us to feel stress. Today's fast-paced and ever-changing environment has caused stress to become a part of our daily living".

Adams (1999), identified internal stressors, such as role preparedness, job satisfaction, life satisfaction, illness symptoms, locus of control and self esteem as major contributors to teacher stress. Adams (1999), wrote that the most critical internal characteristics in explaining vocational teacher stress were found to be illness symptoms, self-esteem and role preparedness. Jarvis (2002), suggest that a number of stressors are intrinsic to teaching, such as long working hours and workload emerged as top factors. Adams (1999), study of vocational education noted the most important internal characteristic in explaining vocational teacher stress were illness symptoms, self-esteem and role preparedness. As the National Education Association (2004) noted, the issue of teacher stress has been an increasing concern over the past few decades. Stress can "make large workloads even tougher to manage, interfere with our personal and social

relationships, and as National Education Association's own data bear out, ultimately send educator hitting the exit door" (National Education Association, 2004).

There is increasing evidence that stress is a major contributor to the health and well being of teachers (Schmitz, Schwarzer, Tang, & Tung, 2001; Farmber, 1991; Borg, 1990). The National Association of Head Teachers in May 2000 indicated that 40% of respondents reported having visited their doctor with a stress-related problem in the previous year and that 25% suffered from serious related health problems including insomnia and depression (Jarvis, 2002).

Stress also has been cited as a major contributor to lower teacher retention rates among new and beginning teachers (Camp, 2002; Jarvis, 2002). Stress is a major contributor to why "one-third of teachers leave the profession within the first five years of teaching" (National Education Association, 2004). The concerns are elevated for teaching fields that are struggling to meet the demand for teachers and it also has created increased concern for urban school districts that experience the highest attrition rates (Urban Teacher Collaborative, 2002). According to the Urban Teacher Collaborative (2002), "Although teacher shortages affect schools and districts across the country to varying degrees, urban districts are facing unique challenges, owing to rapidly growing student enrollments, accelerating rates of teacher retirement, class size reduction initiatives, and demanding working conditions" (p. 7). Moreover, school violence, working conditions and salaries have been identified as factors affecting the supply of educators (American Association for Employment in Education, 2002).

Teacher burnout has been identified as a major consequence to long-term exposure to high stress levels and will result in poor morale, job satisfaction,

absenteeism, lowered productivity and high medical costs (Brown, 1999; Jarvis, 2002). Friedman (2000), outlines burnout as a commonly conceptualized three-dimensional phenomenon consisting of exhaustion, depersonalization and un-accomplishment. The interaction of all three variables is a progressive movement that will lead to stress, lower levels of job satisfaction and frustration for not achieving the teachers perceived teaching ideal (Friedman, 2000).

The burnout model (see figure 2) is a descriptor to illustrate professional efficacy discrepancy. According to the model, burnout in teaching is the mesh between teacher and school as an afflictive engagement between people with high expectation and the harsh reality of occupational life (Friedman, 2000). Friedman (2000) describes the relationship between stress and burnout as the inability of teachers to achieve their ideal, thus creating tension, anxiety and dissatisfaction with their respective performance on the job. Friedman (2000) notes, "The combined cognitive-emotional scenario may begin with a sense of personal unaccomplishment and overload. Stressful events, combined with high, unfulfilled expectations for self-fulfillment, produce such primary stress-inducing experiences as a sense of personal unaccomplishment and sense of overload" (p. 597). Over long periods, such tension will create stress that may result in burnout.

This concept supports the research of Partridge, Slanton and Wadlington (1998) who noted, "The highest risk for stress and burn-out may come at the beginning of an educator's career during preservice field experiences. Even though, preservice teachers may have high academic achievements in core university classes, success as a teacher in a high school setting is not automatic, thus leading to anxiety and distress" (p335).

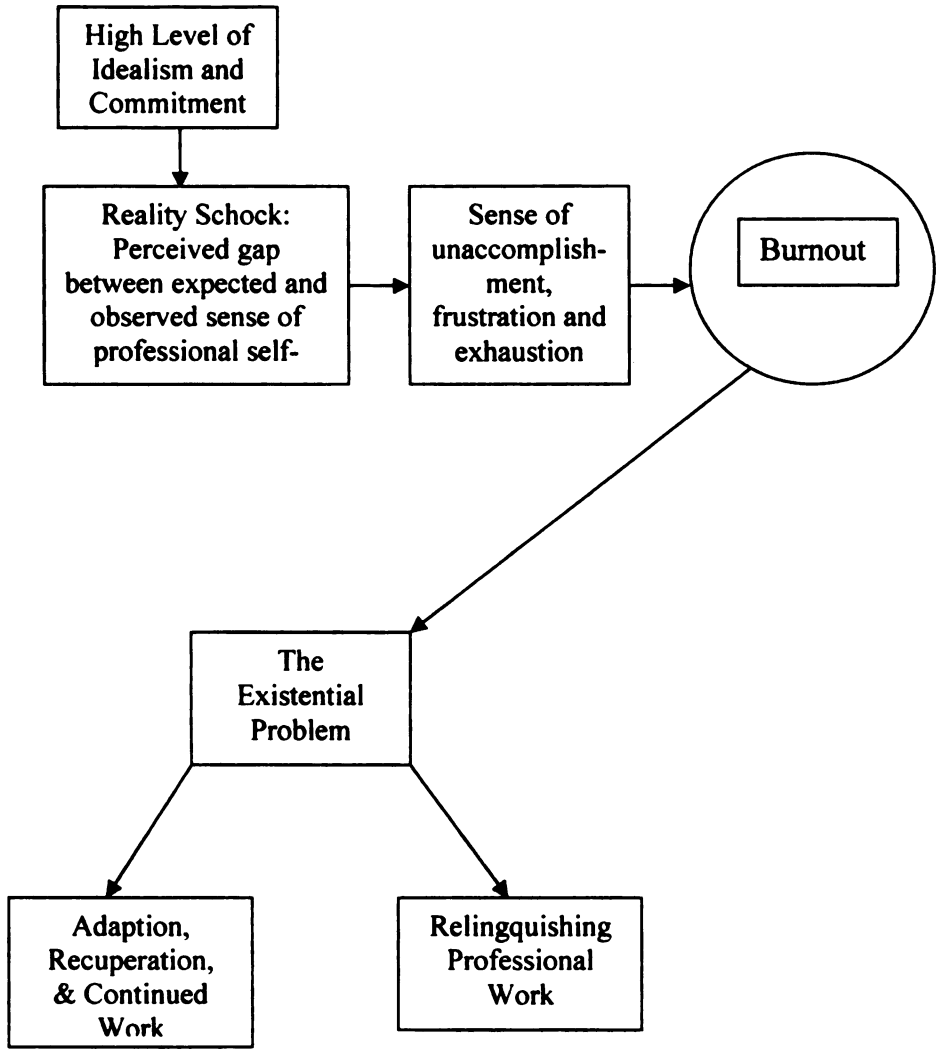

Figure 2: An illustration of the professional efficacy discrepancy approach to understanding burnout. (Friedman, 2000).

Job satisfaction has also been researched as a key link between stress and burnout. Numerous studies have been conducted to evaluate the level of job satisfaction of agricultural education teachers (Bruening, & Hoover, 1991; Cano, & Castillo, 1999; Cano, Castillo, & Conklin, 1999; Cano, & Miller, 1992; Hillison, & Watson, 1991; Bowen, & Radhakrishna, 1991; Beavers, Flowers, Jewell, & Malpiedi, 1990). Figure 3 models the relationship that job satisfaction will have with stress and burnout.

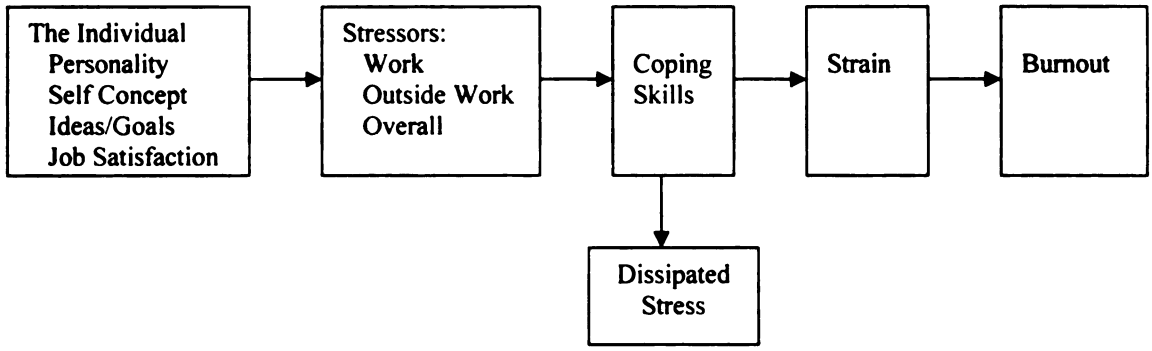

Figure 3: Model for Job Satisfaction and Burnout (Barrick, 1989)

Barrick (1989) noted, "Research has shown that burnout-prone individuals are not lazy or underachievers, but are in fact characterize as overachievers, dynamic, charismatic, empathetic, dedicated, idealistic and people oriented" (p. 35). Barrick (1989) further notes that teachers who experience burnout lack essential coping skills, thus suffer from high stress levels and low job satisfaction. Barrick (1989) concluded that Ohio agricultural education teachers actually experiences high levels of job satisfaction and low levels of stress (See Figure 3).

Factors that teachers found satisfying included achievement, advancement, recognition, responsibility and the work itself, whereas factors that were dissatisfying included interpersonal relationships, policy/administration, salary, supervision/technical, and working conditions (Cano & Castillo, 1999). Research has also identified more teacher dissatisfaction with financial support than with their working environment and professional acceptance. Findings by Thobega and Miller (2003), indicated that agricultural education instructors experience moderate levels of emotional exhaustion in their work.

2.7 Summary

As demonstrated through the review of literature, the ability to retain teachers is a concern to the field of education. More specifically this is a concern to the field of agricultural education. Yet, to date research has primarily demonstrated the shortages in terms of need, but do little to evaluate the reasons 'why' a teacher would choose to engage in or choose to leave the teaching profession.

In chapter three, the methodology for a study to collect baseline data will be provided, in an effort to better understand the life of an Agriscience education teacher in Michigan.

CHAPTER 3

METHODOLOGY

3.1 Chapter Preview

The previous chapters outlined the scope of this study, the relationship of the investigation to the existing research and conceptual framework used in this study. This chapter explores the research design and methodology implemented. The methods for data collection and analysis used in this study are presented in this chapter. The following topics were discussed in this chapter: introduction, research design, population and sample, data collection, research questions, validity, reliability, instrument development, data analysis, statistical procedures and limitations of this study.

3.2 Population

The population for this study consisted of 130 Agriscience teachers in the state of Michigan. For the purpose of this study, the term Michigan Agriscience teacher applies to all individuals teaching in middle school, high school, or career/technical centers. The census was performed using the 2002-2003 Michigan Agriscience educators Directory, which included all Agriscience educators that teach in middle school, high school, and career/technical centers. The population was geographically dispersed throughout the state of Michigan.

3.3 Instrument Development

3.3.1 Design

The researcher designed the instrument following an altered design recommended by Dillman (2000) in *Mail and Internet Surveys: The Tailored Design Method.* The design of the survey instrument was a two panel booklet printed on 8/12 x 11 inch paper. All panels of the survey included both closed and open ended questions. Space was provided throughout the questionnaire for respondents to provide additional feed-back and comments. The survey instrument is included in Appendix B. The survey was color coded for tracking purposes.

3.3.2 Content

The content of the instrument included a brief description on the inside cover with a description of the survey and directions for completion. Items included in the questionnaire were modified from the University of California, Los Angeles Higher Education Research Institute Faculty Survey (UCLA, n.d.) and literature reviewed by the researcher focused on the experiences of an Agriscience teacher in a Michigan ANRE program. While the instrument contained twenty-three questions with sub questions, nine questions with the sub questions was used for the research. Other demographical questions were cross-tabulated with the questions.

Items on the questionnaire included demographics, teaching and personal values, and what and how instructors taught agriculture. The study was a survey instrument used to collect the necessary data providing quantitative data. The survey instrument (see Appendix B) contained open-ended, nominal, and ordinal questions and Likert-type items.

The questionnaire collected data on demographics, teaching and personal values, and descriptors for teaching environment in the local districts. The questionnaire was a survey instrument (see Appendix B) that contained open ended and closed ended questions that collected nominal and ordinal data. All ordinal data utilized a Likert-type scale and is described in detail for each question. Question nine used a 5-point scale that was scaled as follows: 1 = Not at all, 2 = A little, 3 = A fair amount, 4 = Much, 5 = Very Much.

3.3.3 Validity

Validity is "the extent to which an instrument measured what it claimed to measure" (Ary, Jacobs, & Razavieh, 2002, p. 242). The researcher presented the instrument to a panel of judges who evaluated for both face and content validity. The five experts were selected based on their respective expertise in research and evaluation. The panel came from the Department of Agriscience and Natural Resources Education in the College of Agriculture and Natural Resources at Michigan State University.

3.3.4 Reliability

Reliability is "the degree of consistency with which it measures whatever it is measuring" (Ary, Jacobs, & Razavieh, 2002, p. 242). The researcher presented the instrument to a panel of judges who would serve as a pilot group to test the instrument for reliability. The researcher selected a panel of twelve judges who served as Agriscience education interns from Michigan State University. Since the researcher utilized secondary data for this study, a post hoc reliability test was run using the Statistical Package for the Social Sciences (SPSS 11.0). The Cronbach's alpha was .7799 for this study. According

to Ary, Jacobs, and Razavieh (2002), the Cronbach alpha was within an acceptable range for research purposes.

3.4 Data Collection

Data collection for the survey was conducted using a modified approach by Dillman's (2000) *Mail and Internet Surveys: The Tailored Design.* The instrument was distributed through teacher conferences with non-responders receiving direct mail pieces. The two conferences where the surveys were distributed were the summer and fall Professional Development Institute conferences. Data collection included a questionnaire that was distributed at a conference. Non-responders received a follow-up e-mail, a second follow-up mailed questionnaire, and final questionnaire distributed at the Fall Professional Development Institute. In order to facilitate tracking early and late responders, the surveys were color coded; yellow for the first round, pink for the second round, and blue for the third round.

3.4.1 Initial Questions

The initial survey was distributed at the Summer Professional Development Institute for Michigan Agriscience teachers on July 9, 2003. The survey was distributed in the conference packet and teachers were provided instructed to fill out the survey and return during the conference subsequent sessions. For tracking purposes, teachers were instructed to seal all surveys in an envelope and sign a sheet upon return. This would ensure confidentiality of all respondents.

3.4.2 Follow-up E-mail

Since all 130 teachers were not in attendance at the conference, a follow-up e-mail was sent on July 11, 2003. The e-mail thank those who completed the survey,

encouraged non-responders to mail completed survey soon and indicated that a mailing would be provided to those who did not complete the survey (See Appendix B).

3.4.3 Second Follow-Up Questionnaire

A second survey was sent on July 25, 2003 two non-responders to the initial questionnaire and those not in attendance at the summer conference.

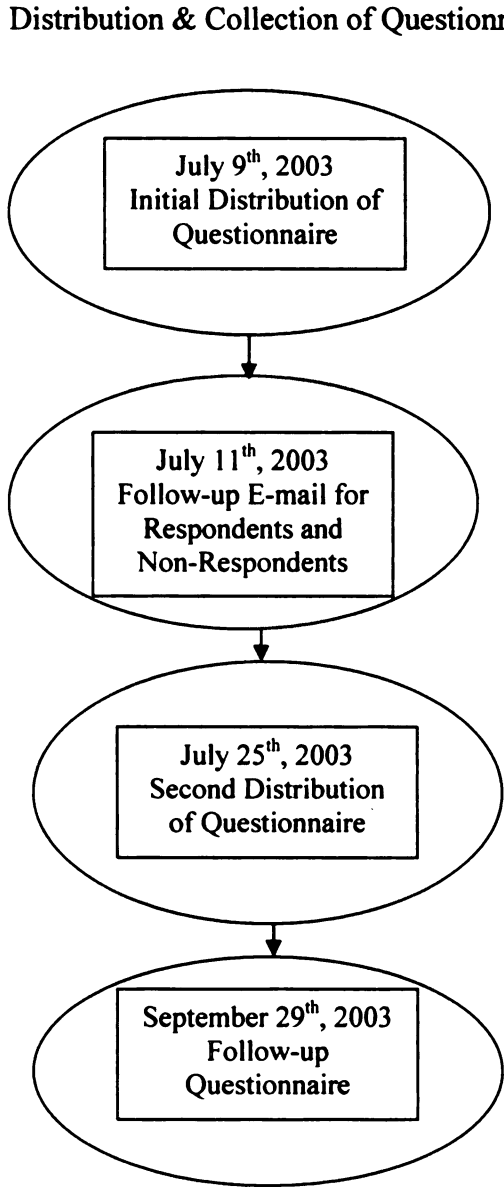

Figure 4: Data Collection Procedures

and self-addressed stamped envelope. The Agriscience education teachers were instructed to write their name on the envelope to eliminate sending out multiple mailings. The cover letter was on ANRECS department letterhead and signed by a faculty member.

3.4.4 Final Follow Up Questionnaire

A third and final survey was distributed to all non responders at the Fall Professional Development Institute conference held September 29-30, 2003. Respondents were instructed to fill out the survey in their conference folder and return and sign a manila envelope.

3.4.5 Processing Procedures

For purposes of consistent processing, the researcher provided a color coded survey along with a cover letter and self-addressed stamped envelop. All survey packets included a survey, cover letter, and self-addressed stamped return envelope. To facilitate proper identification of all surveys, respondents were instructed to write their name on the outside of the envelope included with the instrument.

3.5 Data Analysis Procedures

The researcher utilized the Statistical Package for the Social Sciences (SPSS) version 11.0 to analyze all data. The researcher entered all data from the surveys into SPSS and all data was verified for accuracy in this study. If multiple responses were given on the survey, the researcher selected the first response they came to as the official response.

A record was kept of all early and late respondents and Cronbach Alpha's were run to determine if there was a difference between the groups. The researcher conducted a post hoc reliability test for all questions added to the survey after the initial pilot test.

Descriptive statistics including frequencies, percentages, means, standard deviations, cross tabulations, t-tests and Chi-squares were performed to describe the data utilizing SPSS. A test for significant differences between demographical data and characteristics associated with the experiences of an Agriscience teacher in a Michigan ANRE program utilizing the Chi-square function in SPSS.

3.6 Summary

This next chapter provides an analysis of all data collected in this study. The study population consisted of 130 Michigan Agriscience education instructors and 86 surveys were returned for a response rate of 66.2%. Statistics used to analyze the data included: frequencies, percentages, means, standard deviations, cross tabulations, t-tests and Chi-squares.

Research methods for this study of the Michigan Agriscience teacher's perceptions of factors related to their profession have been described. This chapter provided an overview of the population, the development of the instrument development, overview of the data collection procedures and the procedures used for data analysis. Chapter 4 presents the finding of the research and Chapter 5 presents the conclusions and recommendations.

CHAPTER 4

FINDINGS AND DISCUSSION

4.1 Chapter Preview

The previous chapter outlines the scope of this study, the relationship of the investigation to existing research, the conceptual framework used in the study, and a research design and methodology for the study. This chapter will report the results of this study regarding the objectives outlined in chapter one. All findings will be reported utilizing descriptive analysis of tables that contain data to answer the research questions:

1) Is there a clear sense of what factors led Michigan Agriscience teachers to pursue a career in education?
2) What components of the tripartite mission of agricultural education interest the Michigan Agriscience teachers the most?
3) Where do Michigan Agriscience teachers commit their time in the management of an ANRE program?
4) What types of activities related to education are Michigan Agriscience teachers committed to beyond their teaching assignment?
5) What types of attributes do Michigan Agriscience teachers consider of importance?
6) To what extent do intrinsic and extrinsic factors serve as sources of stress for Michigan Agriscience teachers?
7) Do the experiences of Michigan Agriscience teachers influence their decision to remain employed in the educational field?

The data in this study were analyzed using the Statistical Package for the Social Science (SPSS) version 11.0. Findings are presented to answer the research question outlined in this study. The statistical procedures utilized for evaluating the results were the calculations of frequency tables that included percentages, mean and standard deviation. Cross tabulations were run using SPSS to establish correlations using chi-square.

According to Ary, Jacobs, & Razavieh (2002), a reliability test is "the extent to which a measure yields consistent results" (p249). A reliability test found an alpha=0.7799, therefore the survey was found to be reliable. A t-test was also performed to investigate if there was a difference between early and late respondents. The significance (2-tailed) ranged from 0.472-0.785, therefore as noted by Ary, Jacobs, & Razavieh, there was no significance between early and late respondents.

4.2 Description of Individual Demographical Data

Demographic data were collected from respondents on the following: gender, marital status, ethnicity, educational attainment, background, years of experience, type of school system and type of teacher contract. The demographic data are reported in terms of frequencies, percentages, mean and standard deviation and are listed in Table 2. The descriptive data were broken into two categories, personal information and school system information.

An analysis of the personal information data revealed that 54.8% (n=46) of the respondents were male and 45.2% (n=38) were female. On the issue of marriage, 77.9% (n=67) were married with the remaining 22.1% (n=19) single. Of the respondents, 98.8%

(n=98.8) were Caucasian with the remaining 1.2% (n=1.2) were Asian. Respondents were also asked to identify whether they grew up in either an urban area with a population ranging from 5,000 to over 1,000,000 or a rural area ranging from 5,000 or less. Respondents indicated that 41.9% (n=36) were from an urban area and 58.1% (n=50) were from a rural area.

In terms of educational attainment, respondents were asked to identify their level of education that they are either working on or have achieved. According to the respondents on the level of achievement for their bachelors, 4.8% (n=2) were working on their bachelors, while the remaining 95.2% (n=4) achieved their bachelors. In regards to the level of achievement on their masters, 35.6% (n=26) were working on their masters, while the remaining 64.4% (n=47) achieved their masters. Two of the respondents indicated that they had earned a doctoral degree.

Table 2.

Demographic Characteristics of Respondents

Variable	*n*	*(%)*	*M*	*SD*
Gender (*N*=84)			1.45	.501
Male	46	(54.8)		
Female	38	(45.2)		
Marital Status (*N*=86)			1.22	.417
Married	67	(77.9)		
Single	19	(22.1)		
Ethnicity (*N*=86)			1.03	.323
Caucasian	85	(98.8)		
Asian	1	1.2		
Background (*N*=86)			1.58	.496
Urban	36	(41.9)		
Rural	50	(58.1)		
Years Taught (*N*=85)			1.72	.933
1-10 Years	48	(56.5)		
11-20 Years	17	(20.0)		
21-30 Years	16	(18.8)		
31-40 Years	4	(4.7)		
Education				
Bachelors (*N*=42)			1.05	.216
Working on	2	(4.8)		
Earned	40	(95.2)		
Masters (*N*=73)			1.36	.482
Working on	26	(35.6)		
Earned	47	(64.4)		
EDS (*N*=2)			1.00	.000
Working on	2	(100)		
Doctorate (*N*=2)			2.00	.000
Working on	2	(100)		
Other (*N*=1)			1.00	.000
Earned	1	(100)		

4.3 School System Demographic Data

An analysis of the school demographics data pertaining to the respondents indicated that 37% (n=29) were on a nine month contract, 39.55% (n=34) were on a ninth month plus summer contract, 19.8% (n=17) were on a twelve month contract and 7% (n=6) classified their contract as other. The demographic data regarding school systems is reported in terms of frequencies, percentages, mean and standard deviation and are listed in Table 3.

Table 3.

Demographics on Schools Systems

Variable	*n*	*(%)*	*M*	*SD*
Middle School	17	100	1.00	.000
High School	62	100	1.00	.00
Career and Tech Center	23	100	1.08	.408
Type of Contract			2.00	.907
9 Month	29	33.7		
9 Month & Summer	34	39.5		
12 Month	17	19.8		
Other	6	7.0		

4.4 Question 1

4.4.1 Is there a clear sense of what factors led Michigan Agriscience education teachers to pursue a career in education?

Table 4 reports for the respondent's perceptions of factors that influenced their decision to pursue a career as an Agriscience education instructor. Descriptive statistics, including measures of central tendency and variability were used to summarize and analyze the data. Categorical analysis was performed using the following scales: Not at all (M=1.0-1.49), A little (M=1.50-2.49), A fair amount (M=2.50-3.49), Much (M=3.50-4.49), Very Much (M-4.50-5.0).

With regard to factors important to pursuing a career as an Agriscience education teacher, respondents believed that opportunity to impact student (M=4.58) and opportunity to impact agricultural industry (M=3.68) and are 'Very Much' to 'Much' important, while opportunity to work with FFA (M=3.38), independence (M=3.31), opportunity to influence social change (M=3.27) and flexible schedule (M=3.1) are a 'fair amount important.

A concern over the degree certification for Agriscience education teachers was identified (see Appendix F) when a respondent noted, "I would not mind teaching Agriscience, but I would make agriculture as a minor and concentrate on more physical and earth science."

Table 4.

Importance in Pursuing Career as an Agriscience Instructor

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Opportunity to impact students	85	4.58	0.697	13 (15.1)	9 (10.5)	23 (26.7)	19 (22.1)	19 (22.1)
Opportunity to impact agricultural industry	85	3.68	1.126	1 (1.2)	1 (1.2)	1 (1.2)	27 (31.4)	55 (64.0)
Opportunity to work with FFA	85	3.38	1.573	18 (20.9)	10 (11.6)	9 (10.5)	18 (20.9)	30 (34.9)
Independence	81	3.31	1.251	13 (15.1)	5 (5.8)	17 (19.8)	36 (41.9)	10 (11.6)
Opportunity to influence social change	83	3.27	1.353	3 (3.5)	4 (4.7)	8 (9.3)	34 (39.5)	36 (41.9)
Flexible schedule	83	3.10	1.009	16 (18.6)	6 (7.0)	24 (27.9)	28 (32.6)	9 (10.5)

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

4.5 Question 2

4.5.1 What components of the tripartite mission of agricultural education interest the Michigan Agriscience educator?

Table 5 reports the respondent's perceptions of the component of the tripartite mission of agricultural education that interests the Michigan Agriscience educator. With regard to teaching interest, 32.6% of respondents stated that equal balance between FFA/SAE/instruction is of most interest; 32.6% of the respondents contend that they are interested in all, but lean toward classroom instruction; 19.8% of respondents are interested in all, but lean toward the FFA; 12.8% of the respondents identified their interest is heavily in classroom instruction; 2.3% of respondents identified in all, but lean toward SAE; 2.3% of respondents identified their interest very heavily in SAE; and 1.2% identified their interest very heavily in FFA.

Both positive and negative responses were noted in relation to the implementation of the tripartite mission of agricultural education (see Appendix F). One respondent provided affirmative feedback indicating, "We are beginning an environmental science/natural resources class in a career pathway structure. SAE's will be very important." Another response identified the concern of FFA and SAE being removed from the classroom experience to after school activities when another respondent denoted, "FFA and SAE are after school. This year I will be teaching more non-ag classes. So I cannot incorporate FFA/SAE in instruction." (Agriscience Survey, 2003)

Table 5.
Teaching Interest

Variable (*N*=83)	*n*	%
Very heavily in FFA	1	1.2
Very heavily in SAE	2	2.3
Very heavily in classroom instruction	11	12.8
In all, but leaning toward FFA	17	19.8
In all, but leaning toward SAE	2	2.3
In all, but leaning toward classroom instruction	28	32.6
Equal balance between FFA/SAE/instruction	22	25.6

4.6 Question 3

4.6.1 Where do Michigan Agriscience education teachers commit their time in the management of an ANRE program?

The findings in Table 6 depict where the respondents identified the hours spent on a variety of activities that have been divided into two categories, internal and external to the educational system. Descriptive statistics, including measures of central tendency and variability were used to summarize and analyze the data. Categorical analysis was performed using the following scale: minimal time commitment (*M*=0.0-2.0), moderate time commitment (*M*=2.1-4.0), maximum time commitment (*M*=4.1 and above).

Respondents were asked on average how many hours were spent per week on activities identified it the questionnaire. With regard to time spent on internal factors, respondents indicated that scheduled teaching (*M*=6.09) received the maximum time

commitment. Results also indicated that preparation for teaching (M=3.41), FFA programming (M=2.76), advising students (M=2.73), after school programs (M=2.56), preparing an FFA team for contests (M=2.52), supervising SAE projects (M=2.17) and community service (M=2.04) recorded moderate levels of time commitments.

Lastly, committee work (M=1.94), committee meetings (M=1.94), consultation with community stakeholders (M=1.91) and other administration related issues (M=1.76) recorded minimal time commitments. In reference to the internal factors, Michigan Agriscience teachers reported that they commit a majority of their time to working with their students through teaching and their respective FFA program, while they spend less time on administration and meetings involved with their progam

With regard to time spent on external factors, respondents indicated that household/childcare duties (M=4.72) received the maximum time commitment, while part time jobs (M=1.74) received the minimum time commitment. Results also indicated that preparation for teaching (M=3.41), FFA programming (M=2.76), advising students (M=2.73), after school programs (M=2.56), preparing an FFA team for contest (M=2.52), supervising SAE projects (M=2.17) and community service (M=2.04) recorded moderate time commitments. In reference to the external factors, Michigan Agriscience teachers are heavily committed to their respective families, but spend little time on part-time jobs or related ventures.

Table 6.
Hours Spent on Activities Per Week

Variable	N	M	SD	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	6 n (%)	7 n (%)	8 n (%)
Internal Factors											
Scheduled teaching	82	6.09	1.874	2 (2.3)	3 (3.5)	8 (9.3)	4 (4.7)	6 (7.0)	5 (5.8)	41 (47.7)	13 (15.1)
Preparing for teaching	83	3.41	1.23	1 (1.2)	20 (23.3)	27 (31.4)	21 (24.4)	8 (9.3)	5 (5.8)	1 (47.7)	- (15.1)
FFA programming	83	2.76	1.535	14 (16.3)	28 (32.6)	27 (31.4)	3 (3.5)	5 (5.8)	2 (2.3)	3 (3.5)	1 (1.2)
Advising students	81	2.73	1.194	2 (2.3)	45 (52.3)	19 (22.1)	8 (9.3)	4 (4.7)	2 (2.3)	- -	1 (1.2)
After school programs	80	2.56	1.123	11 (12.8)	33 (38.4)	22 (25.6)	11 (12.8)	- -	3 (3.5)	- -	- -
Preparing an FFA team for contests	83	2.52	1.426	18 (20.9)	33 (38.4)	18 (20.9)	6 (7.0)	4 (4.7)	2 (2.3)	1 (1.2)	1 (1.2)
Supervising SAE projects	82	2.17	1.063	21 (24.4)	39 (45.3)	14 (16.3)	4 (4.7)	3 (3.5)	1 (1.2)	- -	- -
Community or public service	82	2.04	.637	14 (16.3)	52 (60.5)	15 (17.4)	1 (1.2)	- -	- -	- -	- -
Committee work	80	1.94	.536	13 (15.1)	60 (69.8)	6 (7.0)	1 (1.2)	- -	- -	- -	- -
Committee meetings	78	1.94	.543	13 (15.1)	58 (67.4)	6 (7.0)	1 (1.2)	- -	- -	- -	- -
Consultation with community stakeholders	80	1.91	.640	18 (20.9)	53 (61.6)	7 (8.1)	2 (2.3)	- -	- -	- -	- -
Other administration	78	1.76	.856	35 (40.7)	32 (37.2)	6 (7.0)	5 (5.8)	- -	- -	- -	- -
External Factors											
Household/childcare duties	80	4.72	2.176	5 (5.8)	11 (12.8)	9 (10.5)	14 (16.3)	10 (11.6)	11 (12.8)	8 (9.3)	12 (14.0)
Part time job	81	1.74	1.456	55 (64.0)	13 (15.1)	4 (4.7)	3 (3.5)	3 (3.5)	1 (1.2)	1 (1.2)	1 (1.2)

(respondents could choose between: 1=none, 2=1-4, 3=5-8, 4=9-12, 5=13-16, 6=17-20, 7=21-34, 8=35+)

4.7 Question 4

4.7.1 What types of activities related to education are Michigan Agriscience education teachers committed to beyond their teaching assignment?

Findings in Table 7 reveal that 9.3% of the respondents held an administrative position; 82.6% of the respondents had participated in a teaching enhancement workshop; 17.4% of the respondents placed assignments on the internet; 22.1% of respondents collected assignments on the internet, 2.3% of the respondents taught a course exclusively on the internet; 47.7% of the respondents taught a course using community service; 48.8% of the respondents team-taught a course with non agricultural education teachers; 57.0% traveled outside the united states; and 73.3% of the respondents used the internet to access lesson plans.

Table 7.
Educational Activities

Variable	Yes			No	
	N	*n*	*(%)*	*n*	*(%)*
Participated in a teaching enhancement workshop	84	71	(82.6)	13	(15.1)
Used internet to access lesson plans	84	63	(73.3)	21	(24.4)
Traveled outside the United States	84	49	(57.0)	34	(39.5)
Team-taught a course with non agricultural education teacher	84	42	(48.8)	42	(48.8)
Taught a course using community service	82	41	(47.7)	41	(47.7)
Collected assignments on the internet	83	19	(22.1)	64	(74.4)
Placed assignments on the internet	84	15	(17.4)	69	(80.2)
Held an administrative position	83	8	(9.3)	75	(87.2)
Taught a course exclusively through the internet	83	2	(2.3)	81	(94.2)

4.8 Question 5

4.8.1 What types of attributes do Michigan Agriscience teachers consider of importance?

Table 8 reports the respondent's perceptions of factors that influenced their decision to pursue a career as an Agriscience education instructor. Descriptive statistics, including measures of central tendency and variability were used to summarize and analyze the data. Categorical analysis was performed using the following scale: Not at all (M=1.0-1.49), A little (M=1.50-2.49), A fair amount (M=2.50-3.49), Much (M=3.50-4.49), Very Much (M=4.50-5.0).

With regard to factors important to issues of importance, respondents believed that being a good teacher (M=4.74), being a good citizen (M=4.63), raising a family (M=4.38), being a good colleague (M=4.27), influencing social values of student (M=4.01) and being financial well off (M=3.07) as 'very much' to 'much' important. Results also indicated that respondents perceived helping to promote racial understanding (M=3.27), becoming involved in programs to help clean-up the environment (M=3.08), obtaining recognition from colleagues (M=2.52) as 'a fair amount' of importance.

Table 8.
Personal and Professional Issues of Importance

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Being a good teacher	84	4.74	.469	- -	- -	1 (1.2)	20 (23.3)	63 (73.3)
Being a good citizen	84	4.63	.597	- -	1 (1.2)	2 (12.8)	24 (41.9)	57 (41.9)
Raising a family	84	4.38	1.086	4 (4.7)	4 (4.7)	3 (3.5)	18 (20.9)	55 (64.0)
Being a good colleague	84	4.27	.734	- -	1 (1.2)	11 (12.8)	36 (41.9)	36 (41.9)
Influencing social values of my students	84	4.01	.885	- -	5 (5.8)	17 (19.8)	34 (39.5)	28 (32.6)
Being well-off financially	84	3.70	1.039	4 (4.7)	5 (5.8)	22 (25.6)	34 (39.5)	19 (22.1)
Helping to promote racial understanding	84	3.27	1.010	2 (2.3)	16 (18.6)	35 (40.7)	19 (22.1)	12 (14.0)
Becoming involved in programs to clean up the environment	84	3.08	1.020	2 (2.3)	24 (27.9)	33 (38.4)	15 (17.4)	10 (11.6)
Obtaining recognition from my colleagues	84	2.52	1.197	16 (18.6)	34 (39.5)	15 (17.4)	12 (14.0)	7 (8.1)

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

4.9 Question 6

4.9.1 To what extent due intrinsic and extrinsic factors serve as sources of stress for Michigan Agriscience education teachers?

Respondents were asked to identify the factors that have served as a source of stress in their lives. For the purposes of this study, the sources of stress were divided into two categories and were identified as either intrinsic or extrinsic factors. Table 9 reports the respondent's perceptions of sources of stress for the internal and external factors. Descriptive statistics, including measures of central tendency and variability were used to summarize and analyze the data. Categorical analysis was performed using the following scale: Never (M=1.0-1.49), Rarely (M=1.50-2.49), Sometimes (M=2.50-3.49), Frequently (M=3.50-4.49), Always (M=4.50-5.0).

With respect to the intrinsic factors, respondents indicated that institutional procedures/ red tape (M=3.65) frequently served as a source of stress. Respondents also recorded that keeping up with technology (M=2.79), committee work (M=2.74), colleagues (M=2.73) and faculty meetings (M=2.61) sometimes served as a source of stress. Respondents recorded that subtle discrimination (M=2.21) rarely served as a source of stress.

In terms of internal factors associated with the classroom, respondents recorded a higher than average perceived level of stress for teaching load (M=3.42), FFA demands (M=3.33), and students (M=3.25)

In respect to the extrinsic factors, respondents recorded that managing household responsibilities (M=3.50), lack of personal time (M=3.38), and marital/spouse friction (M=2.32) as serving as a source of stress 'sometimes' to 'always'. Results also indicated

that respondents perceived personal finances (M=3.24), keeping up with the agriculture industry (M=2.65) and keeping up with the natural resources issues (M=2.53) 'sometimes' served as a source of stress. Finally, respondents noted that the review/promotion process (M=2.46) rarely served as a source of stress.

Table 9.
Sources of Stress

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Intrinsic Factors								
Institutional procedures/ red tape	85	3.65	.751	- -	5 (5.8)	29 (33.7)	42 (48.8)	9 (10.5)
Teaching load	85	3.42	.850	- -	11 (12.8)	36 (41.9)	29 (33.7)	9 (10.5)
FFA Demands	84	3.33	1.123	8 (9.3)	9 (10.5)	24 (27.9)	33 (38.4)	10 (11.6)
Students	85	3.25	.785	- -	13 (15.1)	43 (50.0)	24 (27.9)	5 (5.8)
Colleagues	84	2.73	.766	2 (2.3)	32 (37.2)	38 (44.2)	11 (12.8)	1 (1.2)
Committee work	85	2.74	.915	6 (7.0)	30 (34.9)	30 (34.9)	18 (20.9)	1 (1.2)
Faculty meetings	85	2.61	.952	11 (12.8)	26 (30.2)	35 (40.7)	11 (12.8)	1 (1.2)
Review/promotion process	84	2.46	.911	11 (12.8)	35 (40.7)	27 (31.4)	10 (11.6)	1 (1.2)
Subtle discrimination	85	2.21	.952	20 (23.3)	36 (41.9)	22 (25.6)	5 (5.8)	2 (2.3)
Extrinsic Factors								
Managing household responsibilities	84	3.50	.871	1 (1.2)	8 (9.3)	33 (38.4)	32 (37.2)	10 (11.6)
Lack of personal time	85	3.38	.976	3 (3.5)	10 (11.6)	35 (40.7)	26 (30.2)	11 (12.8)
Marital/spouse friction	82	3.32	.915	15 (17.4)	35 (40.7)	24 (27.9)	7 (8.1)	1 (1.2)
Personal finances	85	3.24	.868	2 (2.3)	11 (12.8)	44 (51.2)	21 (24.4)	7 (8.1)
Keeping up with technology	85	2.79	.940	7 (8.1)	25 (29.1)	34 (39.5)	17 (19.8)	2 (2.3)
Keeping up with agriculture industry	85	2.65	.869	6 (7.0)	34 (39.5)	20 (33.7)	16 (18.6)	- -
Keeping up with natural resources	85	2.53	.839	8 (9.3)	35 (40.7)	31 (36.0)	11 (12.8)	- -

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

4.10 Question 7

4.10.1 Does the experiences of Michigan Agriscience education teachers influence their decision to remain employed in the educational field?

Respondents were asked if they were to begin their career again, would they still choose to become an Agriscience education teacher. The findings in Table 10 illustrate that 48.8% (n=42) respondents said "definitely yes", 31.4% (n=27) "probably yes", 9.3% (n=8) "not sure and 9.3% (n=8) "probably no".

Table 10.
Begin Career Again

Variable (*N*=83, *M*=1.79, *SD*=.965)	*n*	*%*
Definitely yes	42	(48.8)
Probably yes	27	(31.4)
Not sure	8	(9.3)
Probably no	8	(9.3)
Definitely no	-	-

Cross tabulations were performed to distinguish if there was a significant difference between demographical information and questions pertaining to respondent's career choice. The Alpha level is considered significant if $p < 0.05$, it is considered to be statistically significant. The results (Appendix E) demonstrated that gender was statistically significant $F=6.368$, $p<0.041$ in regards to whether the respondents had considered leaving their current position.

Respondents were asked if they have considered leaving their current position for a non-teaching job. In Table 11, the findings indicate that 50.0% (n=43) respondents said "yes", 45.3% (n=39) "no", with 2.3% (n=2) "not sure".

One respondent indicated that he/she, "will be leaving my agrisience teaching career to pursue an on-line teaching job that allows me more time with my family." Another respondent identified discrimination as a major concern and noted that he/she had, "experienced cultural discrimination.

Table 11.
Description of Respondents

		Yes		No		NA	
Variable	*N*	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Have you ever received an award for teaching	84	58	(67.4)	26	(30.2)	-	-
Have any of your agricultural education courses addressed diversity	83	55	(64.0)	23	(26.7)	5	(5.8)
Have you ever experienced sexual harassment as an agricultural teacher	84	17	(19.8)	65	(75.6)	2	(2.3)
Considered leaving your current position for a non-teaching job	84	43	(50.0)	39	(45.3)	2	(2.3)
Does your FFA chapter require all members to participate in community service	84	29	(33.7)	46	(53.5)	9	(10.5)

4.11 Summary

Chapter IV presented the findings from the survey conducted on Michigan Agriscience Education teachers' experiences as it relates to the management of their local ANRE program. Findings were reported on the seven questions under investigation. The next chapter will provide the conclusions and recommendations for this study.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Chapter Preview

The prior chapters provided the introduction, literature review, methodology, and findings relative to Michigan Agriscience instructors' perceptions regarding personal and professions experiences related to their role as an Agriscience Education teacher. Based on the finding in chapter IV, the following conclusions, recommendations, and implications are presented for each of the seven questions under investigation.
The following are the research questions: 1) Is there a clear sense of what factors led Michigan Agriscience education teachers to pursue a career in education?; 2) What components of the tripartite mission of agricultural education interest the Michigan Agriscience education teachers the most?; 3) Where do Michigan Agriscience education teachers commit their time in the management of an ANRE program?; 4) What types of activities related to education are Michigan Agriscience education teachers committed to beyond their teaching assignment; 5) What types of attributes do Michigan Agriscience education teachers consider of importance; 6) What extent do intrinsic and extrinsic factors serve as sources of stress for Michigan Agriscience education teachers?; 7) Does the experiences of Michigan Agriscience education teachers influence their decision to remain employed in the educational field?

5.2 Overview of Demographical Data

5.2.1 Conclusions Regarding Demographics of Michigan Agriscience education Teachers

The Michigan Agriscience Education teacher base is demographically a homogeneous population except on the issue of gender. Michigan Agriscience education teachers were relatively evenly split between males and females. A majority of the respondents were married with nearly all Caucasian, except one respondent who was Asian. Overall, the Michigan Agriscience education teachers are young in terms of service to the profession with more than half of the respondents having less than 10 years of teaching experience and over two-thirds with less than 20 years of experience. Nearly all of the respondents had earned their bachelors degree with over 95% of respondents having earned or are working on their master's degree.

5.2.2 Conclusions Regarding Demographics of Schools System Data

As for the schools systems that conduct a Michigan ANRE program, nearly three-fourths of the programs are located in a secondary school district and the remaining one-forth are located in county programs identified as career and technical centers. Nearly two-thirds of the school districts retain their teachers with contracts that extend beyond 9 months, while the remaining one-third are retained on a 9 month contract.

A majority of the Michigan ANRE programs teach one or more courses that are viewed as Agriscience. Seventy percent of the Michigan ANRE programs teach 3 or more courses that could be identified with the Agriscience title. Nearly two-thirds of Michigan ANRE programs teach one or more courses that are viewed as natural resources. Fifty-

five percent of the Michigan ANRE programs teach 1-3 courses that could be identified with the natural resources title. Forty-six programs provide non-Agriscience courses as part of the teaching contract and 33 programs provide adult community course as part of the teaching contract.

5.3 Questions 1: Is there a clear sense of what factors led Michigan Agriscience education teachers to pursue a career in education?

5.3.1 Conclusions

It is evident that a majority of Michigan Agriscience teachers desire to make a positive difference as a major motivating factor for pursuing a career in education. As the Michigan Agriscience Education teachers reported, the opportunity to impact students, to impact the agricultural industry and to work with the FFA all received strong support as a reason for entering the field of education. Interestingly, other factors that can be attributed are personal benefits, such as independence and flexible schedules, received less favorable reasons for teaching.

5.3.2 Recommendations

It is evident that the opportunity to impact the lives of students and the industry of agriculture as a whole is a major motivation for one to pursue a career as an Agriscience Education teacher. This is a positive notation for the Agriscience education program in Michigan, due to the fact that the desire to make a difference is what Agriscience Education teachers desire to accomplish. This message must be utilized in recruiting efforts to draw young people into the profession. This message should also be utilized to

market Agriscience education teachers to secondary school districts and even utilized to encourage new ANRE program to be implemented around the state of Michigan.

To assist in this effort, the Department of Community, Agriculture, Recreation and Resource Studies that is charged with conducting the Agriscience teacher education program at Michigan State University should create a full time programmatic position that is designed to focus on program recruitment and teacher recruitment. This position should focus on the recruitment of students into the post-secondary teacher education program at Michigan State University who have an interest in serving the factors that are outlined above. This is critical to conducting successful campaigns to broaden ANRE programming efforts in Michigan and expanding the number of programs.

5.3.3 Programmatic Recommendations

Benchmark 1: Develop a program expansion plan that seeks to develop a new site for Agriscience education programs at the secondary level and implement new teacher recruitment program to expand the diversity and make-up of Agriscience education teachers.

Benchmark 2: Recruitment seminars and on-site visits should be conducted through out the state and on an annual basis to assist in the Agriscience program expansion efforts.

5.3.4 Further Recommended Study

Recommendation is to conduct a study to further analyze what characteristics would teachers attribute to being an effective teacher or being a good citizen. This study would provide valuable insight to what teachers' value regarding the perception of the terms used in this study. A good teacher can and will be different things to different

people. Also, a study of secondary school district principals should be conducted to evaluate the types of programming they seek to incorporate into their local districts and to ascertain if the profile of the Michigan Agriscience teacher and Agriscience education program with their districts are a good fit.

5.4 Question 2: What components of the tripartite mission of agricultural education interest the Michigan Agriscience education teachers the most?

5.4.1 Conclusions

A majority of the Michigan Agriscience Education teachers support the tripartite mission of the agricultural education program that is based on the traditional model of preparing students for a future career in the agricultural industry by developing student knowledge through classroom instruction, skill development through supervised agricultural experience programs and leadership development through the FFA organization. One-fourth (25.6%) of respondents indicated that they believe there should be an equal balance between classroom instruction, supervised agricultural experience programming and FFA programming. Slightly more than one-half (54.7%) recorded that they are interested in all three but lean toward one of the components. Only 16.3% of respondents indicated that their interest resides heavily toward one component of the model.

5.4.2 Recommendations

A vast majority of the Michigan Agriscience Education teachers are in general supportive of the tripartite mission of agricultural education. However, it is unfortunate that not all programs implement the full tripartite mission of agricultural education. To

expand the full agricultural education model in all districts, it is critical to establish criteria and evaluate programs that do not offer all three ANRE program components. This must be accomplished through an annual review processes that will restrict Perkins funding (added cost dollars) to programs that are unable to substantiate involvement in all three components, meeting minimum criteria identified by the Michigan Department of Education.

The first step in this recommendation is for the Michigan Department of Education to conduct an annual evaluation process that requires local Michigan ANRE programs to provide written documentation that includes student enrollment information that is cross-referenced with student involvement in FFA and supervised agricultural experience programming. All reports must be submitted utilizing a standardized format approved by the Michigan Department of Education.

The second step in this recommendation is that all reporting will be evaluated by the Michigan Department of Education state representative for Agriscience and Natural Resources Education and establish benchmarks that will associate the level of funding to the student involvement in all three components of the agricultural education program.

The third step in this recommendation is that the Michigan Department of Education must develop a master list that can be considered a state approved supervised agricultural experience program. The development of the list must be constructed in conjunction with the efforts of the agriculture and natural resources industry and Michigan Association of Agriscience educators.

Another key recommendation to expanding the concept of the full tripartite mission of agricultural education is by providing tangible experiences where all students

in the Agriscience education program experience the complete model. This can be accomplished by implementing an on-site teaching facility that would focus on providing all three components of the tripartite mission of agricultural education. Along with this teaching facility should be the implementation of a collegiate FFA program and the opportunity for supervised agricultural experiences at Michigan State University that will model the Michigan ANRE program. This will reinforce the concept of the importance of the total ANRE program and allow the Agriscience student to gain a working knowledge of the total Michigan ANRE program.

5.4.3 Benchmarks

Benchmark 1: Design and implement an Agriscience teaching facility at Michigan State University that will provide hands-on learning opportunities for 100% of Agriscience teacher education students to gain knowledge and experience of the total tripartite mission of agricultural education.

Benchmark 2: Ninety percent of secondary students must be enrolled in a Michigan Department of Education approved ANRE program, maintain membership in the FFA organization and have maintained a viable supervised agricultural experience program.

Benchmark 3: Ninety percent of students must maintain records in the local ANRE program that substantiate their involvement in the FFA organization and a establish a viable supervised agricultural experience program.

5.4.4 Further Recommended Study

Since a majority of the respondents agree and support all three components of the tripartite mission of agricultural education, further studies should be conducted to

determine what programmatic functions of each of the three areas are most valuable to student learning and are valued by the Agriscience teacher. This would provide great insight into tailored professional development to provide needed training for teachers. For example, this study did not address the degree of teacher interest in career development events, nor did it address to what extent these activities support curriculum. This is one programmatic function of many that should be explored.

5.5 Question 3: Where do Michigan Agriscience education teachers commit their time in the management of an ANRE program?

5.5.1 Conclusion

The single largest time commitment for Michigan Agriscience Education teachers is dedicated to their regular teaching assignment averaging 20-24 hours per week. The second largest time commitment was in the area of preparation for teaching assignments averaging 8-12 hours per week. Beyond the commitment to teaching, FFA programming, advising students, after school programs, preparing teams for contests and supervising agricultural experience programs received a cumulative time commitment estimated at 48 hours per week. Community service, committee work, committee meetings, consultation with stakeholders and other administrative functions constitute a cumulative estimate at 36-40 hours per week. Michigan Agriscience education teacher commit approximately 20 hours per week to managing their household and or child-care duties, while part-time jobs constitute a weekly commitment of approximately 8 hours.

Not surprising, the Michigan Agriscience education time commitments positively correlate with the intrinsic and extrinsic factors that serve as sources of stress. The

intrinsic factors that received high responses as sources of stress were institutional procedures, teaching load, FFA demands and students that relate to their teaching commitment. The extrinsic factor that created the most stress was managing their households which was another major time commitment for Michigan Agriscience Education teachers.

5.5.2 Recommendations

Based on the conclusions, the researcher recommends that Michigan State University's Agriscience teacher education program incorporates extensive time management planning into the undergraduate curriculum, graduate curriculum, new and beginning teacher programming and MAAE professional development opportunities. The Michigan State University Agriscience teaching facility, described in the aforementioned recommendation, would also be an integral component to preparing future and new and beginning teachers with training on how to managing the extensive demands of a Michigan ANRE program.

5.5.3 Benchmarks

Benchmark 1: Provide training to 100% of the teacher education students by addressing time management and program management training on an annual basis.

Benchmark 2: Provide annual in-service training on time management during professional development activities for Michigan Agriscience teachers.

Benchmark 3: Evaluate ANRE program and assess what specifically creates the time management crunch and use evaluation to make programmatic changes in terms of calendars of activities.

5.5.4 Further Recommended Study

Based on the data from this study, the researcher would like to further investigate the time commitments of the Michigan Agriscience education teachers by exploring when and where the commitment above and beyond teaching is occurring. For example, what actually creates a work environment that creates the need to work extensive hours and what can be done to reduce the time involved with program management. Currently, the data suggest that teachers are putting in more than an 80 week, and the researcher would suggest that teacher responded to certain questions by overstating their commitment inadvertently. For example, a teacher may indicate that they train FFA teams for 8 hours a week, but is this for a brief period or the entire year.

5.6 Question 4: What types of activities related to education are Michigan Agriscience education teachers committed to beyond their teaching assignment?

5.6.1 Conclusions

In respect to a variety of professional activities associated with education, a majority of teachers have participated in teaching enhancement workshops while, approximately half of the teachers have taught courses using community service projects, team taught courses with a non-agriculture education teacher and have traveled outside the United States. More than two-thirds of the Michigan Agriscience education teachers have utilized the internet to access lesson plans. Surprisingly, less than ten percent of the Michigan Agriscience education teachers have held administrative position within their respective school districts. Relatively few teachers have utilized the internet to teach courses or even place assignments on the internet. However, nearly two thirds have utilized the internet to access lesson plans for use in the classroom.

5.6.2 Recommendations

A key recommendation is for Michigan State University's Agriscience teacher education program to incorporate training that will address the types of activities that a majority of teachers are engaged in while managing a Michigan ANRE program. The first step is to require students to engage in planning and conducting community service projects in a local community around the State of Michigan. This initiative should be closely tied with and used to advance the concept of service learning, which is a teaching method that integrates the use of community service in the classroom instruction. A recent study denoted that elements of service learning are not widely utilized by Agriscience teachers, even though a majority engages in community service projects (Stewart, 2003).

A second step is to incorporate team teaching activities as a requirement for future teacher educators. To make this application as real as possible, the team teaching should occur in front of secondary students from around secondary programs in the state of Michigan. A final step is to require Michigan State University teacher education students to present professional development workshops through professional development institutes and other educational opportunities.

5.6.3 Benchmarks

Benchmark 1: Require 100% of Agriscience Education students to engage in planning and conduction community service projects.

Benchmark 2: Require 100% of Agriscience Education students to conduct a professional development workshop during teacher professional development institutes and other in-service opportunities.

Benchmark 3: Provide extensive and continuous in-service training to Michigan Agriscience education teachers on the topics of internet usage and technology development for the management of a local ANRE program. Also re-incorporate the technology courses in the undergraduate program that were taught in the Department of ANRECS.

5.6.4 Further Recommended Study

A qualitative study should be conducted to further investigate the lack of use of internet technology in the classroom and to better understand why Michigan Agriscience Education teachers do not utilize technology and the internet more frequently. A further study collecting data that evaluates the barriers and reasons why teachers are not utilizing on line courses or technology would provide needed insight. Factors that should be investigated could be the lack of technology in local school districts, the lack of teacher training or lack of funding to identify a few factors to include.

5.7 Question 5: What types of attributes do Michigan Agriscience teachers consider of importance?

5.7.1 Conclusions

In reference to what Michigan Agriscience teachers consider important, a vast majority of teacher ranked being a good teacher, citizen and colleague, influencing social values of students, as well as raising a family, as issues of great importance. Moderate levels of importance were reported on being well off financially, helping to promote racial understanding and becoming involved in programs to clean up the environment.

Obtaining recognition from colleagues received only a fair amount of relevance as importance to the Michigan Agriscience Education teachers.

5.7.2 Recommendations

The Michigan Agriscience Education teachers identified with what one would consider the altruistic ideals for education. An Agriscience Education teacher that desires to better the lives of others is clearly the type of individual we all hope will serve in the field of education. This positive aspect of the Michigan Agriscience teachers should be utilized as part of a promotional campaign to encourage new districts to establish Agriscience Education programs. Currently, Michigan ANRE programs are present in one-fifth of Michigan's school districts. It is essential that we begin to build inroads into new districts and promote this positive trait of the Michigan ANRE teachers to encourage the development and implementation of new programs.

5.7.3 Benchmarks

Benchmark 1: Develop education brochures that identify what Agriscience Education teachers believe in and why this belief system is valuable to all districts.

Benchmark 2: Distribute the brochure to all school superintendents, principals and counselors in the state of Michigan where an ANRE program does not exist and follow up with invitation to discuss the Michigan ANRE program.

5.8 Question 6: To what extent do intrinsic and extrinsic factors serve as sources of stress for Michigan Agriscience education teachers?

5.8.1 Conclusions

The Michigan Agriscience Education teachers identified both intrinsic and extrinsic factors as serving as sources of stress. The intrinsic factors that received high responses as sources of stress were institutional procedures, teaching load, FFA demands and students. The study identified other intrinsic factors that results in stress to a lesser degree. Those factors include colleagues, committee work, faculty meetings, review and promotion and subtle discrimination.

Extrinsic factors that were viewed as high sources of stress include managing household responsibilities, the lack of personal time, marital /spousal friction and personal finances. Other extrinsic factors that were perceived as sources of stress, but to a lesser degree include keeping up with technology, the agriculture industry and natural resources issues. It is evident that the intrinsic factors associated with teacher's primary responsibility of managing the ANRE program and extrinsic factors dealing with their personal life serve as the greatest sources of stress. This is consistent with findings that identify workload, working hours, competing job roles, classroom discipline and students as major sources of stress to teachers (Jarvis, 2002).

Cross tabulations with sources of stress by demographics revealed that there are significant differences between genders and years of teaching experience when dealing with technology as a source of stress. Cross tabulations also revealed that there is a significant difference between genders when it deals with keeping up with technology as a source of stress.

5.8.2 Recommendations

Due to the fact that stress is a key factor that has led to higher attrition rates among teachers with less than five years experience, it is essential to provide experiences to Agriscience teacher education students that will prepare them for the challenges in the teaching profession. This was supported by a study that evaluated teacher stress and burnout where eight teachers indicated that they considered leaving teaching at the end of the first year and three of the teachers said they intended to quit within the first few years (Friedman, 2000). One of the respondents in this study noted, "When I was in teacher-training college, I was optimistic. I told myself that teaching would put me under pressure, but that I wouldn't skimp on my labor or efforts. It's not like that anymore. There is tremendous time and resources pressure (Friedman, 2000)".

Stress management should be implemented to focus on both intrinsic and extrinsic characteristics to help students in the undergraduate education program be prepared to deal with such stresses. This would best be accomplished by allowing Agriscience teacher education students to experience stress as a part of their training in the undergraduate program. This training is essential to young teachers being able to identify stressors and manage those stressors so that they may proceed into the teaching profession with the skills to lead a well balanced and successful life-style.

Stress management begins with the preparedness of teachers prior to leaving the Department of Education at Michigan State University. Michigan State University's teacher education program does provide a full academic year that is committed to student teaching, but there is only moderate review of the quality of the student teachers experience by Agriscience faculty. The majority of the supervision is conducted by the

on-site teacher with whom the student is placed and there is no guarantee that each student's experience will receive the full attention needed to be successful once they graduate from the university. To address this issue, more practical, hands on experiences must be provided during the student's time at Michigan State University, under the direct supervision of the Agriscience faculty.

In conjunction with prior recommendations, the researcher would recommend that Michigan State University's Agriscience teacher education program implemented an on-site teaching facility that would allow student's to engage in teaching that could provide stressful situations identified in this study under the direct supervisions of the Agriscience faculty. During this training, a major focus can be placed on teaching future teachers the skills to deal with class-loads, students and FFA program management (three of the highest level stressors for teachers in the field).

This would be accomplished by annually bringing high-schools students to the university to provide real students for the Agriscience teacher education students to practice and perfect their skills. This opportunity may also prove beneficial to counsel students early on to assess if teaching is the right field for them. This experience could also be utilized to recruit other students they may not have considered teaching as their profession of choice. Either way, experiential learning as noted by Dewey is the key to true learned experiences and Agriscience faculty would have better insight on how to assist the educational endeavors of their respective students.

It is also recommend that continued in-service and professional development be provided to new and beginning teachers to assist in their development as they apply the skills to managing stress that is created and related to the teaching profession.

5.8.3 Benchmarks

Benchmark 1: Develop an Agriscience Education classroom facility at Michigan State University.

Benchmark 2: Utilize the facility to provide hands-on opportunities for 100% of students enrolled in the teacher education program at Michigan State University to teach high school students during their entire stay at the university.

Benchmark 3: Provide in-service training to 100% of new and beginning teachers through summer professional development on the topic of stress management.

5.8.4 Further Recommended Study

There are many avenues of research that can follow this study. Specifically, research to assess the types of classroom experience that provide the greatest amount of stress. Ideally, a longitudinal study that could investigate in-depth the types of personal experience that teacher endure would provide valuable information for planning and developing in-service opportunities for stress management.

Further research could also be conducted to address present coping skills of the Michigan Agriscience education teachers. Cross tabulations with sources of stress by demographics revealed that there are significant differences between gender and years of teaching experience when dealing with technology. Cross tabulations also revealed that there is a significant difference between genders when it deals with keeping up with technology. Additional studies should be conducted to determine if there is any relevance to the findings.

5.9 Question 7: Does the experiences of Michigan Agriscience teachers influence their decision to remain employed in the educational field?

5.9.1 Conclusions

While a majority of Michigan Agriscience Education teachers indicated that if they could begin again that they would still choose to pursue a career in the field of education, nearly 10 percent said they would not. Nearly half of the Michigan Agriscience teachers also reported that they had considered leaving their current position for a non teaching job. One respondent noted, "Will be leaving my Agriscience teaching career to pursue an on-line teaching job that allows me more time with my family.' Coupled with the knowledge that teachers identified numerous sources of stress with the teaching field, it is reasonable to assume that the field of Agriscience education may deal with a relatively young teacher population for an extended period of time. With the current attrition rates in the field of education, it is unlikely that the same individuals assuming teaching positions today are likely to continue that service for a thirty year period.

5.9.2 Recommendations

The researcher recommends that the Michigan ANRE program review and identify procedures that may potentially reduce the stress loads for teachers. This may results in altering how programs are managed, when conferences and events are conducted or even the streamlining of activities to reduce time-commitments of the Agriscience Education teachers.

5.9.3 Benchmarks

Benchmark 1: Provide counseling to Agriscience teacher education students that can provide insight to the types of issues that teachers will need to address to be successful.

5.9.4 Further Study

Conduct an evaluation that would allow Agriscience teachers to identify what factors associated with the teaching profession would make them reconsider their desire to teach. Is it due to time commitments, stress or other factors not associated with teaching specifically.

Cross tabulations with sources of stress by demographics revealed that there are significant differences between gender and years of teaching experience when dealing with technology. Cross tabulations also revealed that there is a significant difference between genders when it deals with keeping up with technology.

5.10 Summary

This study was undertaken to better understand the reasons why an Agriscience Education teacher has selected the field of education for their career and begin to collect baseline data that will provide insight into the factors, both intrinsic and extrinsic, that may affect their commitment to education as a career choice. This study was conducted in response to the Michigan Association of Agriscience Educators strategic plan that identified teacher recruitment, training and retention as a top priority for the agricultural education profession in Michigan.

The findings from this study have provided baseline data that will provide insight into the life experiences of an Agriscience teacher both personal and professional. These data will provide a stepping stone to identify new areas needed for further investigation that can be utilized to provide professional development planning to address Agriscience teacher needs that are unique to the state of Michigan. As ANRE programming continues to expand its boundaries, leaders within the profession must make it a top priority to evaluate the impact of the respective changes on teacher success.

APPENDIX A

UNIVERSITY COMMITTEE ON RESEASRCH INVOLVING HUMAN SUBJECTS

MICHIGAN STATE
UNIVERSITY

April 30, 2003

TO: Michael WOODS
408 Ag. Hall

RE: IRB # 02-298 CATEGORY: 1-1, 1-2 EXEMPT
RENEWAL APPROVAL DATE: April 28, 2003
EXPIRATION DATE: March 28, 2004

TITLE: A PROFILE OF SERVICE LEARNING IN MICHIGAN SECONDARY AGRICULTURAL EDUCATION AND FFA PROGRAMS

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS APPROVED THIS PROJECT'S RENEWAL.

This letter notes approval for the changes made in investigators, title, and instrument.

RENEWALS: UCRIHS approval is valid until the expiration date listed above. Projects continuing beyond this date must be renewed with the renewal form. A maximum of four such expedited renewals are possible. Investigators wishing to continue a project beyond that time need to submit a 5-year renewal application for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please include a revision form with the renewal. To revise an approved protocol at any other time during the year, send your written request with an attached revision cover sheet to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email.
UCRIHS@msu.edu

Sincerely,

Ashir Kumar, M.D.
UCRIHS Chair

AK

OFFICE OF
RESEARCH
ETHICS AND
STANDARDS

University Committee on
Research Involving
Human Subjects
Michigan State University
202 Olds Hall
East Lansing, MI
48824
517/355-2180
FAX: 517/432-4503
Web: www.msu.edu/user/ucrihs
E-Mail: ucrihs@msu.edu

APPENDIX B

UNIVERSITY COMMITTEE ON RESEASRCH INVOLVING HUMAN SUBJECTS

MICHIGAN STATE
UNIVERSITY

August 26, 2004

TO: Michael WOODS
408 Ag. Hall

RE: **IRB # 02-298** CATEGORY: 1-1, 1-2 EXEMPT

RENEWAL APPROVAL DATE: August 25, 2004

EXPIRATION DATE: August 24, 2005

TITLE: A PROFILE OF SERVICE LEARNING IN MICHIGAN SECONDARY AGRICULTURAL EDUCATION AND FFA PROGRAMS

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the **UCRIHS APPROVED THIS PROJECT'S RENEWAL.**

This letter also notes approval for the addition of Jeff Hawes as co-investigator.

RENEWALS: UCRIHS approval is valid until the expiration date listed above. Projects continuing beyond this date must be renewed with the renewal form. A maximum of four such expedited renewals are possible. Investigators wishing to continue a project beyond that time need to submit a 5-year renewal application for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please include a revision form with the renewal. To revise an approved protocol at any other time during the year, send your written request with an attached revision cover sheet to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email.
UCRIHS@msu.edu.

Sincerely,

Peter Vasilenko, Ph.D.
UCRIHS Chair

OFFICE OF RESEARCH ETHICS AND STANDARDS
University Committee on Research Involving Human Subjects
Michigan State University
202 Olds Hall
East Lansing, MI
48824
517/355-2180
FAX: 517/432-4503
Web: www.msu.edu/user/ucrihs
E-Mail: ucrihs@msu.edu

PV: rt

cc: Jeff Hawes
412 Agriculture Hall

Appendix C

AgriScience Teacher Survey

Exploring the AgriScience experience.

ANR Education and
Communication Systems
Michigan State University
408 Agriculture Hall
East Lansing, MI
48824.1039

Dear Agriscience Instructor:

The recent release of the Strategic Plan for Agriscience and Natural Resource Education in Michigan outlines six main objectives: quality programming; teacher recruitment, preparation and retention; greater diversity; ANR career cluster expansion and support; promotion and marketing; and expanding personal and financial resources. In order to achieve these objectives, it is important to have your insights. Therefore, we would appreciate your input with this survey. The anticipated time to complete the survey is 15 minutes. If you have any questions about the survey, please email either Michael Woods (mwoods@msu.edu) or Courtney Stewart (stewa280@msu.edu).

1. Gender: (circle one)	Male	Female

2. Are you currently: (Circle one)	
a. Married	1
b. Unmarried with partner	2
c. Single	3

3. Racial/Ethnic group: (Circle one)	
a. White/Caucasian	1
b. African American/Black	2
c. American Indian	3
d. Asian American/Asian	4
e. Latino/Chicano	5
f. Other (please specify):	6

4. Please circle the highest degree earned and/or degree pursuing.	Degree Earned	Currently Working On
a. Bachelor's (B.A., B.S., etc.)	1	2
b. Master's (M.A., M.S., etc.)	1	2
c. Ed.D.	1	2
d. Ph.D	1	2
e. Other (please specify):	1	2

5. Which of the following best describes the type of place where you grew up? (Circle one)		
a.	Major metropolitan area (over one million people)	1
b.	Large city (100,000 to one million people)	2
c.	Medium sized city (25,000 to 99,999 people)	3
d.	Smaller city (5,000 to 24,999 people)	4
e.	Town or village (2,500 to 4,999 people)	5
f.	Country or a very small town (under 2,500 people)	6
g.	No choice describes where I live, because I have moved often	7
h.	Other (please specify):	8

6. How many years have you taught agricultural education at the secondary level?	

7. Is the school you teach in a ... (Circle all that apply)	
a. Middle School	1
b. High School	2
c. Career/Tech Center	3
d. Other (please specify):	4

8. Do you have a... (Circle one)	
a. Nine-month teaching contract	1
b. Nine-month teaching contract with summer option	2
c. Twelve month teaching contract	3
d. Other (please specify):	4

9. How important were each of the following in your decision to pursue a career as an Agriscience instructor? (circle the number that best reflects your answer for **each** item)	**Not at all**	**A little**	**A fair amount**	**Much**	**Very much**
a. Opportunity to work with the FFA	1	2	3	4	5
b. Independence	1	2	3	4	5
c. Flexible schedule	1	2	3	4	5
d. Opportunities for teaching	1	2	3	4	5
e. Opportunity to influence social change	1	2	3	4	5
f. Opportunity to impact students	1	2	3	4	5
g. Opportunity to impact agriculture industry	1	2	3	4	5
h. Other (specify):	1	2	3	4	5
i. Other (specify):	1	2	3	4	5
j. Other (specify):	1	2	3	4	5

10. How many of the following courses have you taught in the past year?						
(Circle a number for **each** item)	**0**	**1**	**2**	**3**	**4**	**5+**
a. Agriscience related	**0**	1	2	3	4	5+
b. Natural Resources related	0	1	2	3	4	5+
c. Non-Agriscience	0	1	2	3	4	5+
d. Adult community course	0	1	2	3	4	5+
e. Other (specify):	0	1	2	3	4	5+
f. Other (specify):	0	1	2	3	4	5+
g. Other (specify):	0	1	2	3	4	5+

11. If you were to begin your career again, would you still want to be an Agriscience Teacher? (Circle one)	
a. Definitely yes	1
b. Probably yes	2
c. Not sure	3
d. Probably no	4
e. Definitely no	5

12. Which of the three components (FFA, SAE, classroom) of agricultural education do your interests most reside? (circle one)	
a. Very heavily in FFA	1
b. Very heavily in SAE	2
c. Very heavily in classroom instruction	3
d. In all, but leaning toward FFA	4
e. In all, but leaning toward SAE	5
f. In all, but leaning toward classroom instruction	6
g. Equal balance between FFA, SAE, and classroom instruction	7

Comments:_____

13. During the present term, how many hours per week on the average do you spend on each of the following activities? (Circle a number for **each** item)	None	1-4	5-8	9-12	13-16	17-20	21-34	35+
a. Advising students	1	2	3	4	5	6	7	8
b. After school programs	1	2	3	4	5	6	7	8
c. Committee work	1	2	3	4	5	6	7	8
d. Committee meetings	1	2	3	4	5	6	7	8
e. Community or public service	1	2	3	4	5	6	7	8
f. Consultation with community stakeholders	1	2	3	4	5	6	7	8
g. FFA programming	1	2	3	4	5	6	7	8
h. Household/childcare duties	1	2	3	4	5	6	7	8
i. Other administration	1	2	3	4	5	6	7	8
j. Part time job	1	2	3	4	5	6	7	8
k. Preparing an FFA team for a contest	1	2	3	4	5	6	7	8
l. Preparing for teaching	1	2	3	4	5	6	7	8
m. Scheduled teaching	1	2	3	4	5	6	7	8
n. Supervising SAE projects	1	2	3	4	5	6	7	8

14. Agricultural education has had a long history surrounding community service. Please circle the number that best reflects your answer for each item	Never	Rarely	Sometimes	Frequently	Always
a. Implemented community service elements into your agricultural education course(s)?	1	2	3	4	5
b. The community service activities aligned with class content	1	2	3	4	5
c. The students had an integral part in planning the community service activity	1	2	3	4	5
d. The community service activities met community needs	1	2	3	4	5
e. Time was taken before the community service activities to discuss the project	1	2	3	4	5
f. Time was taken after the community service activities to discuss the project	1	2	3	4	5
g. Reflection activities, such as journal writing, papers, group discussions, were performed	1	2	3	4	5
h. Transportation issues causes difficulty to perform community service activities	1	2	3	4	5
i. Access to funding causes difficulty when performing community service activities	1	2	3	4	5
j. Community service activities take too much time to perform	1	2	3	4	5
k. Community service activities take too much time to organize	1	2	3	4	5
l. Establishing community partnerships takes too much time	1	2	3	4	5

15. Are you engaged in any of the following activities? (Circle an answer for **each** item)	**Yes**	**No**
a. Held an administrative position	1	2
b. Participated in a teaching enhancement workshop	1	2
c. Placed assignments on the Internet	1	2
d. Collected assignments on the Internet	1	2
e. Taught a course exclusively through the Internet	1	2
f. Taught a course using community service	1	2
g. Team-taught a course with a non ag ed teacher	1	2
h. Traveled outside the United States	1	2
i. Used the Internet to assess lesson plans	1	2

16. How important are each of the following items to you? (circle the number that best reflects your answer for **each** item)	**Not at all**	**A little**	**A fair amount**	**Much**	**Very much**
a. Influencing social values of my students	1	2	3	4	5
b. Raising a family	1	2	3	4	5
c. Being well-off financially	1	2	3	4	5
d. Becoming involved in programs to clean up the environment	1	2	3	4	5
e. Helping to promote racial understanding	1	2	3	4	5
f. Obtaining recognition from my colleagues for contributions to agricultural education	1	2	3	4	5
g. Being a good colleague	1	2	3	4	5
h. Being a good citizen	1	2	3	4	5
i. Being a good teacher	1	2	3	4	5

17. Do any of the following statements describe you, please circle either Yes, No or NA (not applicable):	**Yes**	**No**	**NA**
a. Have you ever received an award for teaching?	1	2	3
b. Have any of your agricultural education courses addressed diversity?	1	2	3
c. Have you ever experienced sexual harassment as an agricultural teacher?	1	2	3
d. Considered leaving your current position for a non-teaching job?	1	2	3
e. Does your FFA chapter require all members to participate in community service?	1	2	3

18. How important are each of the following items to you as an agricultural education instructor? (circle the number that best reflects your answer for **each** item)	**Not at all**	**A little**	**A fair amount**	**Much**	**Very much**
a. Develop student's ability to think clearly	1	2	3	4	5
b. Prepare students for employment	1	2	3	4	5
c. Prepare students for higher education	1	2	3	4	5
d. Help students develop personal values	1	2	3	4	5
e. Enhance students' self understanding	1	2	3	4	5
f. Prepare students for responsible citizenship	1	2	3	4	5
g. Enhance students' knowledge of diversity	1	2	3	4	5
h. Prepare students to understand the impact of globalization	1	2	3	4	5
i. Other (specify):	1	2	3	4	5
j. Other (specify):	1	2	3	4	5
k. Other (specify):	1	2	3	4	5

Comments: _____

19. Please indicate the extent to which each of the following has been a source of stress. (circle the number that best reflects your answer for each item)	**Never**	**Rarely**	**Sometimes**	**Frequently**	**Always**
a. Managing household responsibilities	1	2	3	4	5
b. Review/promotion process	1	2	3	4	5
c. Subtle discrimination	1	2	3	4	5
d. Personal finances	1	2	3	4	5
e. Committee work	1	2	3	4	5
f. Faculty meetings	1	2	3	4	5
g. Colleagues	1	2	3	4	5
h. Students	1	2	3	4	5
i. FFA demands	1	2	3	4	5
j. Institutional procedures/"red tape"	1	2	3	4	5
k. Teaching load	1	2	3	4	5
l. Marital/spousal friction	1	2	3	4	5
m. Lack of personal time	1	2	3	4	5
n. Keeping up with technology	1	2	3	4	5
o. Keeping up with agriculture industry	1	2	3	4	5
p. Keeping up with natural resource issues	1	2	3	4	5
q. Other (please specify):	1	2	3	4	5
r. Other (please specify):	1	2	3	4	5
s. Other (please specify):	1	2	3	4	5

20. Please indicate your agreement with each statement. (circle the number that best reflects your answer for **each** item)	**Strongly disagree**	**Somewhat disagree**	**No opinion**	**Somewhat agree**	**Strongly Agree**
a. Agricultural education curriculum should promote globalization.	1	2	3	4	5
b. Agricultural education curriculum should address social diversity issues.	1	2	3	4	5
c. Agricultural education should encourage students to be involved in community service	1	2	3	4	5
d. Pressure to prepare for FFA activities often prevents me from being completely effective in my teaching.	1	2	3	4	5
e. Agricultural education curriculum needs to change to reflect contemporary issues.	1	2	3	4	5
f. FFA programs need to change to reflect new issues in agriculture.	1	2	3	4	5
g. Agricultural education in public schools is prepared to meet future needs.	1	2	3	4	5

21. Standardized testing influences my... (circle the number that best reflects your answer for **each** item)	**Very negatively**	**Somewhat negatively**	**No influence**	**Somewhat positively**	**Very positively**
a. Teaching methods	1	2	3	4	5
b. Curriculum objectives	1	2	3	4	5
c. FFA programming	1	2	3	4	5
d. Use of SAE projects	1	2	3	4	5
e. Use of community service	1	2	3	4	5
f. Other: (specify)	1	2	3	4	5

22. How often do you use the following evaluation methods in your agricultural education course(s)? (Circle the number that best reflects your answer for **each** item.)	Never	Rarely	Sometimes	Frequently	Always
a. Multiple-choice exams	1	2	3	4	5
b. True-false exams	1	2	3	4	5
c. Essay exams	1	2	3	4	5
d. Short-answer exams	1	2	3	4	5
e. Quizzes	1	2	3	4	5
f. Weekly assignments	1	2	3	4	5
g. Student presentations	1	2	3	4	5
h. Research papers	1	2	3	4	5
i. Journals	1	2	3	4	5
j. Student evaluations of each others' work	1	2	3	4	5
k. Grading on a curve	1	2	3	4	5
l. Competency-based grading	1	2	3	4	5
m. Take home homework	1	2	3	4	5

23. How often do you use the following instructional techniques/methods in your agricultural education course(s)? (Circle the number that best reflects your answer for **each** item.)	Never	Rarely	Sometimes	Frequently	Always
a. Class discussions	1	2	3	4	5
b. Computer-aided instruction	1	2	3	4	5
c. Cooperative learning (small groups)	1	2	3	4	5
d. Field trips	1	2	3	4	5
e. Demonstrations	1	2	3	4	5
f. Group projects	1	2	3	4	5
g. Independent projects	1	2	3	4	5
h. Extensive lecturing	1	2	3	4	5
i. Multiple drafts of written work	1	2	3	4	5
j. Community service as part of coursework	1	2	3	4	5
k. Student SAE projects	1	2	3	4	5
l. Integration of FFA events	1	2	3	4	5

Comments: Please provide any additional comments you believe are important to advancing the Agriscience curriculum within Michigan, or skills areas needed by future Agriscience Instructors not identified.

Thank you for your time and assistance with the survey.

Education & Communication Systems
Michigan State University
408 Agriculture Hall
East Lansing, MI 48824.1039

517.355.6580 x 202
mwoods@msu.edu

APPENDIX D

To: miagscience@msue.msue.msu.edu
From: "Michael D. Woods"mwoods@msu.edu
Date: 11 July 2003, 12:59:43 PM
Subject: Assistance needed

Dear Teachers,

For those of you that attended the recent PDI, you where invited to participate in a survey looking into the life of an ANR instructor. We where very pleased to receive 38 completed surveys. However in order to insure that we have the best picture of the activities that Michigan Agriscience teachers take art in, we really need to get the rest of your responses. If you did not complete the survey at the PDI, could you please check your registration packet for the survey, complete and return to me at the address listed on the back of the survey. In order to eliminate redundant mailings, please put your name on the envelope. Your name will not be linked to the survey, it will only be used to ensure that your name is removed from future mailings requesting participation.

In light of the current issues taking place here at MSU regarding the future of the ANRECS department and the unveiling of the MAAE strategic plan, your insights will be very helpful in providing the best academic program and recruitment efforts for future Agriscience teachers.

Your assistance is greatly appreciated. Should you have questions or need further information, please contact me via e-mail (mwoods@msu.edu) or phone (517) 355-6580 x 202. Again, thank you for your time and assistance with this study.

Best regards,
Michael Woods

Michael D. Woods, Ph.D.
Assistant Professor

ANR Education & Communications Systems
408 Agricultural Hall
Michigan State University
East Lansing, MI 48824-1039

Office: 517.355.6580 x 202
Fax: 517.353.4981
E-mail: mwoods@msu.edu

APPENDIX E

July 24, 2003

Dear <name of Agriscience Instructor>,

The recent release of the Strategic Plan for Agriscience and Natural Resources Education in Michigan outlines six objectives: 1) quality programming; 2) teacher recruitment and retention; 3) greater diversity; 4) ANR career cluster expansion and support; 5) promotion and marketing; 6) expanding personal and financial resources. What you and other Agriscience Instructors say on the enclosed survey will help achieve these objectives, hence it is important to have your insights. A self addressed stamped envelope has been enclosed for your ease in returning the survey. The anticipated time to complete the survey is 15 minutes.

In order to eliminate redundant mailings, please pt your name on the envelope when returning the survey. Your name will not be linked to the survey; it will only be used to ensure that your name is removed from future mailings requesting participation. Please note that on the backside of this letter, you will find all human subject confidentiality information. Your assistance is greatly appreciated in advancing Agriscience education in Michigan.

Should you have questions, please contact me at 517.355.6580 x202 or mwoods@msu.edu. Thank you for your time and assistance with this study.

Best regards,

Michael D. Woods Ph.D.
Assistant Professor
ANRECS

APPENDIX F

Table 12.
Number and Type of Courses Taught

				0	1	2	3	4	5
Variable	*N*	*M*	*SD*	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*N*
Agriscience	84	4.36	1.445	3 (3.5)	8 (9.3)	12 (14.0)	17 (19.8)	21 (24.4)	23 (26.7)
Natural resources	60	2.48	1.455	16 (18.6)	22 (25.6)	11 (12.8)	3 (3.5)	4 (4.7)	4 (4.7)
Non-Agriscience	46	2.91	1.671	12 (14.0)	10 (11.6)	8 (9.3)	7 (8.1)	4 (4.7)	5 (5.8)
Adult community course	33	1.58	1.2	23 (26.7)	7 (8.1)	- -	1 (1.2)	1 (1.2)	1 (1.2)
Other	7	2.14	1.676	4 (4.7)	1 (1.2)	- -	1 (1.2)	1 (1.2)	- -
Other	5	2.00	2.236	4 (4.7)	- -	- -	- -	- -	1 (1.2)
Other	4	1.00	-	4 (4.7)	- -	- -	- -	- -	- -

(respondents could choose between 0, 1, 2, 3, 4, and 5)

Table 13.
Importance of Issues as an Agriscience Instructor

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Develop student's ability to think clearly	84	4.49	.570	- -	- -	3 (3.5)	37 (43.0)	44 (51.2)
Prepare students for employment	84	4.36	.688	- -	1 (1.2)	7 (8.1)	37 (43.0)	39 (51.2)
Prepare students for higher education	83	4.10	.775	- -	1 (1.2)	18 (20.9)	36 (41.9)	28 (32.6)
Help students develop personal values	84	4.31	.760	- -	3 (3.5)	6 (7.0)	37 (43.0)	38 (44.2)
Enhance students' self understanding	84	4.25	.674	- -	1 (1.2)	8 (9.3)	44 (51.2)	31 (36.0)
Prepare students for responsible citizenship	84	4.44	.682	- -	- -	6 (7.0)	35 (40.7)	43 (50.)
Enhance students' knowledge of diversity	82	3.66	.933	1 (1.2)	6 (8.0)	30 (34.9)	28 (32.6)	17 (19.8)
Prepare students to understand the impact of globalization	84	3.48	.911	1 (1.2)	9 (10.5)	35 (40.7)	27 (31.4)	12 (14.0)
Other	2	4.50	.707	- -	- -	- -	1 (1.2)	1 (1.2)

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

Table 14.
Agree with Issues

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Agricultural education curriculum should promote globalization	85	3.89	.817	2 (2.3)	3 (3.5)	12 (14.0)	53 (61.6)	15 (17.4)
Agricultural education curriculum should address social diversity	85	3.87	.870	2 (2.3)	5 (5.8)	11 (2.8)	51 (9.3)	16 (.6)
Agricultural education should encourage students to be involved in community service	85	4.46	.646	- -	1 (1.2)	4 (4.7)	35 (40.7)	45 (52.3)
Pressure to prepare for FFA activities often prevents me from being completely effective in my teaching	84	3.56	1.155	7 (8.1)	9 (10.5)	13 (15.1)	40 (46.5)	15 (7.4)
Agricultural education curriculum needs to change to reflect contemporary issues	85	3.92	.941	2 (2.3)	4 (4.7)	17 (19.8)	38 (44.2)	24 (27.9)
FFA programs need to change to reflect new issues in agriculture	83	4.02	.855	1 (1.2)	4 (4.7)	11 (12.8)	43 (50.0)	24 (7.9)
Agricultural education in public schools is prepared to meet future needs	85	3.45	1.160	3 (3.5)	23 (26.7)	6 (7.0)	39 (45.3)	14 (16.3)

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

Table 15.
Standardized Testing

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Teaching methods	85	3.14	.915	1 (1.2)	25 (29.1)	22 (25.6)	35 (40.7)	2 (2.3)
Curriculum objectives	85	3.51	.921	1 (1.2)	16 (18.6)	13 (15.1)	49 (57.0)	6 (7.0)
FFA programming	85	2.98	.771	3 (3.5)	15 (17.4)	50 (58.1)	15 (17.4)	2 (2.3)
Use of SAE projects	85	3.05	.815	2 (2.3)	16 (18.6)	47 (54.7)	16 (18.6)	4 (4.7)
Use of community service	85	3.01	.715	2 (2.3)	13 (15.1)	54 (62.8)	14 (16.3)	2 (2.3)
Other	4	3.0	0.0	- -	- -	4 (4.7)	- -	- -

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

Table 16.
Evaluation Methods

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Multiple choice exams	85	3.42	.905	3 (3.5)	9 (10.5)	28 (32.6)	39 (45.3)	6 (7.0)
True-false exams	85	3.24	.972	5 (5.8)	13 (15.1)	28 (32.6)	35 (40.7)	4 (4.7)
Essay exams	84	3.29	.926	3 (3.5)	12 (14.0)	33 (38.4)	30 (34.9)	6 (7.0)
Short-answer exams	85	3.71	.721	- -	4 (4.7)	26 (30.2)	46 (53.5)	9 (10.5)
Quizzes	84	3.85	.720	- -	3 (3.5)	20 (23.3)	48 (55.8)	13 (15.1)
Weekly assignments	85	3.99	.866	1 (1.2)	2 (2.3)	20 (23.3)	36 (41.9)	26 (30.2)
Student presentations	84	3.68	.697	- -	2 (2.3)	32 (37.2)	41 (47.7)	9 (10.5)
Research papers	84	3.13	.954	3 (3.5)	19 (22.1)	31 (36.0)	26 (30.2)	5 (5.8)
Journals	84	2.82	1.214	12 (14.0)	26 (30.2)	19 (22.1)	19 (22.1)	8 (9.3)
Students' evaluations of each others' work	85	2.72	.959	8 (9.3)	27 (31.4)	34 (39.5)	13 (15.1)	3 (3.5)
Grading on a curve	85	2.14	1.167	32 (37.2)	24 (27.9)	19 (22.1)	5 (5.8)	5 (5.8)
Competency-based grading	84	3.07	1.170	11 (12.8)	10 (11.6)	36 (41.9)	16 (18.6)	11 (12.8)
Take home homework	85	3.08	1.003	5 (5.8)	18 (20.9)	33 (38.4)	23 (26.7)	6 (7.0)

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

Table 17.
Instructional Techniques/Methods

Variable	*N*	*M*	*SD*	Not at all *n* (%)	A little *n* (%)	A fair amount *n* (%)	Much *n* (%)	Very much *n* (%)
Class discussions	85	3.89	.690	- -	2 (2.3)	19 (22.1)	50 (58.1)	14 (16.3)
Computer-aided instruction	85	3.35	.827	3 (3.5)	5 (5.8)	41 (47.7)	31 (36.0)	5 (5.8)
Cooperative learning	85	3.67	.605	- -	2 (2.3)	28 (32.6)	51 (59.3)	4 (4.7)
Field trips	85	3.09	.734	2 (2.3)	11 (12.8)	51 (59.3)	19 (22.1)	2 (2.3)
Demonstrations	85	3.55	.779	- -	6 (7.0)	35 (40.7)	35 (40.7)	9 (10.5)
Group projects	85	3.64	.652	- -	2 (2.3)	33 (38.4)	44 (51.2)	6 (7.0)
Independent projects	85	3.55	.748	- -	5 (5.8)	36 (41.9)	36 (14.0)	8 (1.2)
Extensive lecturing	85	2.69	.817	4 (4.7)	32 (37.2)	36 (41.9)	12 (14.0)	1 (1.2)
Multiple drafts of written work	84	2.51	.703	4 (4.7)	39 (45.3)	35 (40.7)	6 (7.0)	- -
Community service as part of coursework	85	2.72	.908	8 (9.3)	26 (30.2)	33 (38.4)	18 (20.9)	- -
Student SAE projects	85	3.02	1.175	12 (14.0)	14 (16.3)	26 (30.2)	26 (30.2)	7 (8.1)
Integration of FFA events	85	2.96	1.2	15 (17.4)	10 (11.6)	30 (34.9)	23 (26.7)	7 (8.1)

(1=not at all, 2=a little, 3=a fair amount, 4=much, 5=very much)

Table 18.
Cross Tabulation – Considered leaving your current position for a non teaching job by Gender, Marital Status, Years Taught

	Considered Leaving Current Position		
Variable	Yes	No	Not Sure
Gender			
*(N =82)			
Female	14	21	2
Male	28	17	-
Marital Status			
**(N =84)			
Married	8	10	1
Single	35	29	1
Years Taught			
***(N =83)			
1-5	17	18	1
6-10	7	4	-
11-15	6	4	-
16-20	2	5	-
21-25	7	5	-
26-30	2	2	-
30-35	2	1	-

*x^2=6.368, df=2, p=.041, ** x^2=1.456, df=2, p=.483, ***x^2=4.363, df=12, p=.976

Table 19.
Cross Tabulation – If you were to begin your career again, would you still want to be an Agriscience teacher by Gender, Marital Status, Years Taught

Variable	Would You Still Want to be an Agriscience Teacher				
	Definitely Yes	Probably Yes	Not Sure	Probably No	Definitely No
Gender *(N=82)					
Female	22	15	4	5	-
Male	19	11	4	3	-
Marital Status **(N=84)					
Married	34	18	8	6	-
Single	8	9	-	2	-
Years Taught ***(N=83)					
1-5	16	12	4	4	-
6-10	5	4	1	2	-
11-15	7	2	-	1	-
16-20	5	1	-	1	-
21-25	5	5	2	-	-
26-30	1	3	-	-	-
30-35	2	-	1	-	-

*x^2=.363, df=3, p=.948, **x^2=4.475, df=3, p=.215, ***x^2=14.727, df=18, p=.681

Table 20.
Cross Tabulation – Extent to which Institutional Procedures/Red Tape have been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to Which Institutional Procedures have been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	-	2	11	18	6
Male	-	2	18	23	3
Marital Status **(N=84)					
Married	-	4	23	32	7
Single	-	1	6	10	2
Years Taught ***(N=83)					
1-5	-	2	15	13	6
6-10	-	2	3	7	-
11-15	-	-	1	7	2
16-20	-	-	5	1	1
21-25	-	-	1	11	-
26-30	-	1	3	-	-
30-35	-	-	-	3	-

*x^2=2.351, df=3, p=.503, **x^2=.114, df=3, p=.990, ***x^2=34.889, df=18, p=.010

Table 21.
Cross Tabulation – Extent to which FFA Demands have been a Source of Stress by Gender, Marital Status, Years Taught

	Extent to which FFA Demands have been a Source of Stress				
Variable	Never	Rarely	Sometimes	Frequently	Always
Gender					
*(N=82)					
Female	3	6	11	11	5
Male	5	2	13	21	5
Marital Status					
**(N=84)					
Married	6	6	20	28	6
Single	2	3	4	5	4
Years Taught					
***(N=83)					
1-5	5	5	8	12	6
6-10	1	2	3	6	-
11-15	-	-	4	5	1
16-20	-	1	4	2	-
21-25	2	1	2	4	2
26-30	-	-	1	2	1
30-35	-	-	1	2	-

*x^2=4.641, df=4, p=.326, **x^2=3.962, df=4, p=.411, ***x^2=16.120, df=24, p=.884

Table 22.
Cross Tabulation – Extent to which Students have been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Students have been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N =82)					
Female	-	7	16	11	3
Male	-	6	25	13	2
Marital Status **(N =84)					
Married	-	10	35	19	2
Single	-	3	8	5	3
Years Taught ***(N =83)					
1-5	-	9	13	11	3
6-10	-	1	7	4	-
11-15	-	-	6	3	1
16-20	-	1	6	-	-
21-25	-	1	7	3	1
26-30	-	-	3	1	-
30-35	-	-	1	2	-

*x^2=1.460, df=3, p=.691, **x^2=4.467, df=3, p=.215, ***x^2=16.194, df=18, p=.579

Table 23.
Cross Tabulation – Extent to which Colleagues have been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Colleagues have been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N =82)					
Female	1	10	17	8	1
Male	1	22	19	3	-
Marital Status **(N =84)					
Married	2	28	28	7	-
Single	-	4	10	4	1
Years Taught ***(N =83)					
1-5	1	13	15	6	1
6-10	-	5	5	2	-
11-15	-	4	5	1	-
16-20	1	3	3	-	-
21-25	-	5	6	1	-
26-30	-	1	2	-	-
30-35	-	1	2	-	-

*x^2=7.172, df=4, p=.127, **x^2=7.362, df=4, p=.118, ***x^2=10.020, df=24, p=.994

Table 24.
Cross Tabulation – Extent to which Committee Work has been a Source of Stress by Gender, Marital Status, Years Taught

	Extent to which Committee Work has been a Source of Stress				
Variable	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	3	11	14	9	-
Male	3	18	15	9	1
Marital Status **(N=84)					
Married	4	25	23	14	-
Single	2	5	7	4	1
Years Taught ***(N=83)					
1-5	5	16	9	5	1
6-10	-	4	7	1	-
11-15	-	2	4	4	-
16-20	-	3	3	1	-
21-25	-	3	5	4	-
26-30	1	1	1	1	-
30-35	-	1	1	1	-

*x^2=1.769, df=4, p=.778, ** x^2=4.466, df=4, p=.347, ***x^2=18.859, df=24, p=.759

Table 25.
Cross Tabulation – Extent to which Faculty Meetings have been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Faculty Meetings have been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	6	8	18	3	2
Male	5	17	16	8	-
Marital Status **(N=84)					
Married	10	21	23	10	2
Single	1	5	12	1	-
Years Taught ***(N=83)					
1-5	8	11	15	1	1
6-10	-	6	5	1	-
11-15	2	-	5	3	-
16-20	-	3	2	2	-
21-25	-	3	6	3	-
26-30	1	3	-	-	-
30-35	-	-	2	1	-

*x^2=6.826, df=4, p=.145, **x^2=5.823, df=4, p=.213, ***x^2=29.399, df=24, p=.205

Table 26.
Cross Tabulation – Extent to which Review and Promotion have been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Review and Promotion have been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	5	14	11	6	-
Male	5	21	15	4	1
Marital Status **(N=84)					
Married	9	28	21	8	-
Single	2	7	6	2	1
Years Taught ***(N=83)					
1-5	2	15	11	6	1
6-10	2	6	4	-	-
11-15	2	7	1	-	-
16-20	1	4	2	-	-
21-25	4	1	4	3	-
26-30	-	2	2	-	-
30-35	-	-	3	-	-

*x^2=2.229, df=4, p=.694, **x^2=3.800, df=4, p=.434, *** x^2=28.462, df=24, p=.241

Table 27.
Cross Tabulation – Extent to which Teaching Load has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Teaching Load has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N =82)					
Female	-	4	19	10	4
Male	-	7	17	17	5
Marital Status **(N =84)					
Married	-	9	30	21	6
Single	-	2	6	8	3
Years Taught ***(N =83)					
1-5	-	4	16	11	5
6-10	-	2	5	4	1
11-15	-	-	6	4	-
16-20	-	3	3	1	-
21-25	-	1	4	6	1
26-30	-	1	2	-	1
30-35	-	-	-	3	-

*x^2=1.902, df=3, p=.593, ** x^2=1.864, df=3, p=.601 ***x^2=20.293, df=18, p=.317

Table 28.
Cross Tabulation – Extent to which Subtle Discrimination has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Subtle Discrimination has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	6	13	14	3	1
Male	13	22	8	2	1
Marital Status **(N=84)					
Married	17	29	16	3	1
Single	3	7	6	2	1
Years Taught ***(N=83)					
1-5	4	17	11	3	1
6-10	3	6	3	-	-
11-15	4	5	-	-	1
16-20	4	2	-	1	-
21-25	4	3	5	-	-
26-30	1	2	1	-	-
30-35	-	1	2	-	-

*x^2=5.822, df=4, p=.213, **x^2=2.883, df=4, p=.578 ***x^2=25.060, df=24, p=.403

Table 29.
Cross Tabulation – Extent to which Keeping up with Technology has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Keeping up with Technology has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	6	12	10	9	-
Male	1	13	22	8	2
Marital Status **(N=84)					
Married	5	19	26	14	2
Single	2	6	8	3	-
Years Taught ***(N=83)					
1-5	7	15	11	3	-
6-10	-	4	7	1	-
11-15	-	2	5	2	1
16-20	-	2	2	3	-
21-25	-	1	5	5	1
26-30	-	1	3	-	-
30-35	-	-	1	2	-

*x^2=9.304, df=4, p=.054, **x^2=1.015, df=4, p=.908 ***x^2=35.945, df=24, p=.050

Table 30.
Cross Tabulation – Extent to which Managing Household Responsibilities has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Managing Household Responsibilities has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	1	1	13	16	5
Male	-	7	20	15	4
Marital Status **(N=84)					
Married	1	5	26	27	7
Single	-	3	7	5	3
Years Taught ***(N=83)					
1-5	1	3	15	12	4
6-10	-	-	4	6	2
11-15	-	1	1	6	2
16-20	-	1	4	2	-
21-25	-	1	5	4	2
26-30	-	1	2	1	-
30-35	-	1	2	-	-

*x^2=5.998, df=4, p=.199, **x^2=2.577, df=4, p=.631 ***x^2=15.210, df=24, p=.914

Table 31.
Cross Tabulation – Extent to which Lack of Personal Time has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Lack of Personal Time has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N =82)					
Female	1	4	15	11	6
Male	2	4	20	15	5
Marital Status **(N =84)					
Married	2	8	26	22	8
Single	1	2	9	4	3
Years Taught ***(N =83)					
1-5	2	4	17	10	3
6-10	-	3	4	4	1
11-15	-	1	3	3	3
16-20	-	1	4	2	-
21-25	-	1	5	3	3
26-30	1	-	1	2	-
30-35	-	-	1	2	-

*x^2=.787, df=4, p=.940, **x^2=1.349, df=4, p=.853 ***x^2=20.054, df=24, p=.694

Table 32.
Cross Tabulation – Extent to which Marital/Spousal Friction has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Marital/Spousal Friction has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	8	17	7	2	1
Male	7	17	16	5	-
Marital Status **(N=84)					
Married	7	30	21	7	-
Single	8	5	3	-	1
Years Taught ***(N=83)					
1-5	9	14	10	2	-
6-10	2	3	4	3	-
11-15	-	5	2	2	1
16-20	1	3	3	-	-
21-25	2	6	2	-	-
26-30	1	2	1	-	-
30-35	-	2	1	-	-

*x^2=4.698, df=4, p=.320, **x^2=17.230, df=4, p=.002 ***x^2=21.654, df=24, p=.600

Table 33
Cross Tabulation – Extent to which Personal Finances has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Personal Finances has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	-	4	15	13	5
Male	2	6	28	8	2
Marital Status **(N=84)					
Married	2	8	39	13	4
Single	-	3	5	8	3
Years Taught ***(N=83)					
1-5	1	4	14	12	5
6-10	-	2	7	3	-
11-15	-	1	6	3	-
16-20	-	2	5	-	-
21-25	1	1	6	2	2
26-30	-	-	4	-	-
30-35	-	1	1	1	-

*x^2=7.924, df=4, p=.094, **x^2=8.485, df=4, p=.075 ***x^2=19.462, df=24, p=.727

Table 34
Cross Tabulation – Extent to which Keeping Up with Agricultural Industry has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Keeping Up with Agricultural Industry has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(N=82)					
Female	5	16	11	5	-
Male	3	17	20	6	-
Marital Status **(N=84)					
Married	8	27	22	9	-
Single	-	8	9	2	-
Years Taught ***(N=83)					
1-5	7	13	14	2	-
6-10	-	8	4	-	-
11-15	-	4	3	3	-
16-20	-	2	3	2	-
21-25	-	7	3	2	-
26-30	1	1	2	-	-
30-35	-	-	2	1	-

*x^2=2.285, df=3, p=.515, **x^2=3.215, df=3, p=.360 ***x^2=24.131, df=18, p=.151

Table 35
Cross Tabulation – Extent to which Keeping Up with Natural Resources Issues has been a Source of Stress by Gender, Marital Status, Years Taught

Variable	Extent to which Keeping Up with Natural Resources Issues has been a Source of Stress				
	Never	Rarely	Sometimes	Frequently	Always
Gender *(*N*=82)					
Female	3	18	11	5	-
Male	3	14	18	11	-
Marital Status **(*N*=84)					
Married	6	25	22	13	-
Single	-	9	7	3	-
Years Taught ***(*N*=83)					
1-5	5	17	10	4	-
6-10	-	8	3	1	-
11-15	-	3	5	2	-
16-20	-	1	3	3	-
21-25	-	5	5	2	-
26-30	1	-	2	1	-
30-35	-	-	1	2	-

*x^2=3.505, *df*=3, *p*=.320, **x^2=2.232, *df*=3, *p*=.526 ***x^2=24.165, *df*=18, *p*=.15.

APPENDIX G

Teacher Comments on Question 9

"Flexible schedule? Don't you mean overworked??"

Teacher Comments on Question 11

"Limited job opportunities north of US 10"

"I would not mind teaching Agriscience, but I would make agriculture as a minor & concentrate on more physical and earth science."

Teacher Comments on Question 12

"I try to do all 3."

"FFA & SAE are after school. This year I will be teaching more non-agriculture classes. So cannot incorporate FFA/SAE in instruction."

"If better (any) SAE materials were available on paper it would be greatly appreciated."

"This is due to set-up of my school. Lat job FFA was discouraged."

"We are beginning an environmental science/natural resource class in a career pathway structure. SAE's will be very important."

"Students participate in VICA because I do not want to be the only instructor from the school in overnight trips! VICA has at least 10 or more staff members going."

"We don't call it SAE but hands on projects in and outside of the classroom."

Teacher Comments on Question 13:

"What do you mean by a term? 9 weeks? Semester? Year? Summer? I answered based on last semester (spring)."

Teacher Comments on Question 14

"Did you mean access to funding?"

Teacher Comments on Question 17

"Have also experienced cultural discrimination."

"Diversity! I am an Asian American Female teaching Agriscience in Detroit Public schools."

Teacher Comments on Question 18

"Many of these overlap self understanding, citizenship, and personal values go hand in hand."

Additional Teacher Comments

"Ag teachers need to be on the cutting edge to rapidly change curriculum to reflect the changing job market and demographics in the district area, state, nation and world."

"Ag Teachers who are stagnant will be faced with dwindling enrollment."

"Agriscience curriculum needs to include practical applications to enhance student learning."

"Technical Skills important, but little money available."

"Current Michigan issues posted & updated on website for instruction."

"Will be leaving my Agriscience teaching career to pursue an on-line teaching job that allows me more time with my family."

"Lack of technical equipment such as computer projectors and student access to computers during class often hamper use of new methods."

"My program is floriculture, retail and greenhouse production. I do not teach natural resources and agriculture."

"Keep in mind, SAE & FFA is not yet implemented."

Bibliography

Adams, E. (1999). Vocational teacher stress and internal characteristics. *Journal of Vocational and Technical Education*, 16(1).

American Association for Employment in Education. (2000). *Research report on educator supply and demand in the united states*. Ohio. Retrieved February 11, 2004 from, http://www.ub-careers.buffalo.edu/aaee/ www.aaee.org

Anderson, T. J., Barrick, K. R., & Hughes, M. (1992). Responsibilities of teacher education for vocational teacher professional development programs. *Journal of Agricultural Education*, 33(2).

Arikewuyo, M. O. (2004). Stress management strategies of secondary teachers in Nigeria. *Educational Research*, 46(2), 195-207.

Ary, D., Jacobs, L., C., Razavieh, A. (2002). *Introduction to research in education.* Belmont, CA: Wadsworth/Thomson Learning.

Athanasou, J. (2003). Factors influencing job choice. *International Journal for Educational and Vocational Guidance*, 3(1), 205-221.

Baker, M., & Hedges, L. (1991). Professional education and differences between graduate career choice. *Journal of Agricultural Education*, 32(3).

Bakker, A. B., Bosveld, W., Dierendonck, D., Schaufeli, W. B., & Sixma, H. J. (2000). Patient demands, lack of reciprocity, and burnout: A five-year longitudinal study among general practitioners. *Journal of Organizational Behavior*, 21(1).

Banset, E., Barrett, L. A., & Gilbertson, O. (1995). A model for the evaluation and reward of teaching in agricultural education. *Journal of Agricultural Education*, 36(2).

Barrick, K. R. (1989). Burnout and job satisfaction of vocational supervisors. *Journal of Agricultural Education*, 30(4).

Beavers, K. C., Flowers, J. L., Jewell, L. R., & Malpiedi, B. J. (1990). Relationship between levels of job satisfaction expressed by north carolina vocational agriculture teachers and their perceptions toward the agricultural education teaching profession. *Journal of Agricultural Education*, 31(1).

Bell, L. C., & Fritz, S. M. (1992). Deterrents to female enrollment in secondary agricultural education programs in nebraska. *Journal of Agricultural Education*, 33(4).

Birkenholz, R. J., Greiman, B. C., & Walker, W. D. (2002). The induction of novice teachers: A study of first-year agriculture teachers in missouri. *Journal of Agricultural Education.*

Birkeland, S. E. & Johnson, S. M. (2003). Pursuing a sense of success: New teachers explain their career decisions. *American Educational Research Journal*, 40(3), 581-617.

Blatchford, P., Edmonds, S., Martin, C., & Moriarty, V. (2001). Teaching young children: Perceived satisfaction and stress. *Educational Research*, 43(1), 33-46.

Boettcher, G., & Joerger, R. (2000). A description of the nature and impact of teaching events and forms of beginning teacher assistance as experienced by Minnesota agricultural education teachers. *Journal of Agricultural Education*, 41(4).

Bowman, R. F. (2003). Reframing the dialogue about committed teaching. *Educational Forum,* 68(1), 52-61.

Bowen, B. E., & Radhakrishna, R. B. (1991). Job satisfaction of agricultural education faculty: A constant phenomena. *Journal of Agricultural Education*, 32(2).

Brown, S. (2003). Working models: Why mentoring programs may be the key to teacher retention. *Techniques*, 78(5), 18-21.

Brown, Z. A., & Uehara, D. L. (1999). Coping with teacher stress: A research synthesis for pacific educators. A special report of the Office of Educational Research and Improvement.

Bruening, T. H., & Hoover, T. S. (1991). Personal life factors as related to effectiveness and satisfaction of secondary agricultural teachers. *Journal of Agricultural Education*, 32(4).

Camp, W. G. (2000). A national study of the supply and demand for teachers of agricultural education in 1996-1998. Virginia: Virginia Polytech Institute. Retrieved March February 11, 2004 from,http://aaaeonline.ifas.ufl.edu/Reports/teachersupply2002.pdf

Camp, W. G. (2002). A national study of the supply and demand for teachers of agricultural education in 1999-2001. Virginia: Virginia Polytech Institute. Retrieved March February 11, 2004 from,http://aaaeonline.ifas.ufl.edu/Reports/teachersupply2002.pdf

Camp, W. G., & Talbert, A. B. (1994). A year in the lives of three beginning agriculture teachers. *Journal of Agricultural Education*, 35(2).

Cano, J., & Castillo, J. X. (1999). A comparative analysis of ohio agriculture teachers' level of job satisfaction. *Journal of Agricultural Education*, 40(4).

Cano, J., Castillo, J. X., & Conklin, E. A. (1999). Job satisfaction of ohio agricultural education teachers. *Journal of Agricultural Education*, 40(2).

Cano, J., & Miller, G. (1992). A gender analysis of job satisfaction, job satisfier factors, and job dissatisfier factors of agricultural education teachers. *Journal of Agricultural Education*, 33(3).

Cano, J., & Miller, G. (1992). An analysis of job satisfaction and job satisfier factors among six taxonomies of agricultural education teachers. *Journal of Agricultural Education*, 33(4).

Carter, S. (1994). Teacher stress and burnout: *Organizing systems to support competent social behavior in children and youth.* A special report of the Office of Special Education and Rehabilitation Services, Washington D.C.

Christmas, O. L. (1990). The level of agreement among superintendents, principals, and instructors concerning adult agricultural education. *Journal of Agricultural Education*, 31(3).

Chung, N., & Garton, B. (1996). The inservice needs of beginning teachers of agriculture as perceived by beginning teachers, teacher educators, and state supervisors. *Journal of Agricultural Education*, 37(3).

Chung, N., & Garton, B. (1997). An assessment of the inservice needs of beginning teachers of agriculture using two assessment models. *Journal of Agricultural Education*, 38(3).

Cochran, J. E., Gartin, S. A., Lawrence, L. D., & Odell, K. S. (1990). The job and marital satisfaction of secondary agriculture teachers and their spouses. *Journal of Agricultural Education*, 31(3).

Connors, J. J., & Mundt, J. P. (1999). Problems and challenges associated with the first years of teaching agriculture: A framework for pre-service and in-service education. *Journal of Agricultural Education*, 40(1).

Conroy, C. A., Dailey, A. L., & Shelley-Tolbert, C. A. (2000). The move to agriscience and its impact on teacher education in agricuture. *Journal of Agricultural Education*, 41(4).

Coughlin, M. T., Gartin, S. A., & Lawrence, L. D. (1988). Benefits and problems experience by spouses of vocational agriculture teachers in west virginia. *Journal of Agricultural Education*, 29(1).

Council of the Great City Schools. (2000). The urban teacher challenge: Teacher demand and supply in the great city schools. Retrieved March 14, 2004 from, http://www.cgcs.org/../pdfs/utc.pdf

Cremin, L. (1957). *The republic and the school: Horace mann on the education of free men.* New York: Teachers College.

Croom, B. (2003). Teacher burnout in agricultural education. *Journal of Agricultural Education, 44(1), 1.*

Darling-Hammond, L. (2000). Futures of teaching in american education. *Journal of educational change*, 1(4), 353-373.

Darling-Hammond, L., & Youngs, P. (2002). Defining highly qualified teachers: What does scientifically-based research actually tell us? *Research News and Comment.* Retrieved March 1, 2004 from, http://www.aera.net/pubs/er/pdf/vol31_09/AERA310903.pdf.

Decker, P., Mayer, D. & Glazerman, S. (2004). The effects of teach for america: Findings from a national evaluation. *Mathematical Policy Research.* Retrieved March 11, 2004 from, http://www.garibaldi.com/properties/mathematical.html

Delnero, J., & Montgomery, D. (2001). Perceptions of work among california agriculture teachers. *Journal of Agricultural Education*, 42(2).

Densten, I. (2001). Rethinking burnout. *Journal of Organizational Behavior*, 22(1).

Dewey, J. (1916). *Democracy and education.* New York: Macmillan.

Dewey, J. (1956). Experience *and education.* New York: Macmillan.

Dillman, D. A. (2000). *Mail and internet surveys: The tailored design method.* New York: J. Wiley.

Dobbins, T. R., & Layfield, D. K. (2002). In-service needs and perceived competencies of south carolina agricultural educators. *Journal of Agricultural Education*, 43(4).

Drake, J. B., & Findlay, H. J. (1989). Influence of selected experiences on perceived levels of competence of secondary vocational agriculture teachers. *Journal of Agricultural Education*, 30(3).

Dyer, J. E., & Kalme, N. (2000). Perceptions of iowa secondary school principals toward agricultural education. *Journal of Agricultural Education*, 41(4).

Dyer, J. E., & Osborne, E. W. (1999). The influence of science applications in agriculture courses on attitudes of Illinois guidance counselors at model student-teaching centers. *Journal of Agricultural Education*, 40(4).

Farber, B. A. (2000). Treatment strategies for different types of teacher burnout. Paper presented at the APA Annual convention, San Francisco, August 1998. Retrieved March 1, 2004 from, http://www.apa.org/.

Filler, L. (1965). *Horace mann on the crisis in education.* Ohio: Antioch Press.

Fisher, D., Frey, N., Rodenberg, K., & Samuels, P. (2001). Growing a community of high quality teachers: An urban professional development middle school. *Education*, 122(2), 310-319.

Flowers, J., & Pepple, J. (1988) Assessment of the morale of beginning vocational agriculture teachers in illinois. *Journal of Agricultural Education*, 29(2).

Friedman, I. A. (2000). Burnout in teachers: Shattered dreams of impeccable professional performance. *Psychotherapy in Practice*, 56(5), 595-606.

Gonzalez, P. A. (1995). *Causes and cures of teacher attrition: A selected bibliography focusing on special educators.* A special report of the National Association of State Directors of Special Education.

Gonzalez, P. A. (1995). Factors that influence teacher attrition. A special report of National Association of State Directors of Special Education.

Hancock, C. B. (2003). An examination of pre-service teaching intensity in relation to in-service teacher retention and attrition. *Journal of Research in Music Education*, 51(2), 166-178.

Handley, C. S., Harrison, B. C., Kotrlik, J. W., & Redmann, D. H. (2000). Information technology related professional development needs of Louisiana agriscience teachers. *Journal of Agricultural Education*, 41(1).

Harper, C. (1970). *A century of public education.* Connecticut: Greenwood Press.

Hebert, M., & Kotrlik, J. W. (1990). Effects of spousal satisfaction and selected career factors on the job satisfaction of extension agents. *Journal of Agricultural Education*, 31(3).

Henderson, J. L., & Nieto, R. D. (1991). Morale levels of first-year agricultural education teachers in ohio. *Journal of Agricultural Education*, 32(1).

Herren, R. V. (1996). Agricultural education and the 1862 land-grant institutions: The rest of the story. *Journal of Agricultural Education*, 37(2).

Hillison, J. (1996). Agricultural education and the 1862 land-grant institutions: The rest of the story. *Journal of Agricultural Education*, 37(2).

Hillison, J., & Watson, L. W. (1991). Temperament type and job satisfaction among selected west virginia agricultural education teachers. *Journal of Agricultural Education*, 32(4).

Jacob, S., & Place, N. T. (2001). Stress: Professional development needs of extension faculty. *Journal of Agricultural Education*, 42(1).

Jarvis, M. (2002). Teacher stress: A critical review of recent findings and suggestions for future research directions. *Stress News*, 14(1).

Jewell, L. R. (1988). Differences between length of employment contracts of vocational agriculture teachers and their level of involvement with ffa activities. *Journal of Agricultural Education*, 29(1).

Law, S. (1999). Leadership for learning: The changing culture of professional development in schools. *Journal of Educational Administration*, 37(1), 66-80.

Lee, J. S., & Westrom, L. E. (1990). The interaction of secondary agriculture teachers health and the school as a workplace. *Journal of Agricultural Education*, 31(3).

Menchaca, V. D. (2003). A wake-up call for principals: Are your novice teachers leaving? *Catalyst for Change*, 33(1), 25-27.

Merriam-Webster. (2004). On-line Dictionary. Retrieved March 31, 2004 from http://www.m-w.com/

Michigan Association of Agriscience Educators. (July 2003). *Strategic Plan.* Retrieved February 11, 2004 from, http://teachanr.com/

Miller, W. W., & Muller, J. E. (1993). Are the more academically able agriculture teacher candidates not entering or remaining in the teaching profession. *Journal of Agricultural Education*, 34(4).

Miller, G., & Thobega, M. (2003). Relationship of supervision with job satisfaction and retention of high school agriculture teachers. *Journal of Agricultural Education*, 44(1).

Moss, J. W., & Rome, C. (1990). Satisfaction with agricultural education student teaching. *Journal of Agricultural Education*, 31(2).

Mundt, J. P., & Nesbitt, D. L. (1993). An evaluation of the university of Idaho beginning agriculture teacher induction program. *Journal of Agricultural Education*, 34(2).

Murray-Harvey, R. (1999). Under stress: The concerns and coping strategies of teacher education students. Paper presented at the Colloquium in Field Based Education Flinders University, Adelaide. Retrieved February 11, 2004 from, http://www.caper.com.au/testud.htm

Myburgh, C., & Poggenpoel, M. (2002). Teachers' experience of their school environment: Implications for health promotion. *Education*, 123(2), 260-279.

National Commission on Excellence in Education. (1983). A nation at risk: The imperative educational reform. Washington, DC: U.S. Government Printing Office.

National Commission on Teaching and America's Future. (2002). Unraveling the teacher shortage problem: Teacher retention is the key. A position paper was presented at a symposium in Wahsington D.C. in 2002. Retrieved March 31, 2004 from, http://www.nctaf.org/documents/nctaf/Unraveling_Shortage_Problem.doc

National Education Association. (2004). Attracting and keeping quality teachers. Retrieved May 15, 2004 form,http://www.nea.org/teachershortage

National Education Association. (2004). Stressed out. Retrieved May 15, 2004 from, http://www.nea.org/neatoday/0401/stressed.html

National Center for Education Statistics. (2002). *Digest of educational statistics*. Retrieved March 4, 2004 from, http://nces.ed.gov/

North Central Regional Educational Laboratory. (2004). *Educational Policy*. Retrieved March 4, 2004 from, http://www.ncrel.org/

North Central Regional Educational Laboratory. (2004) *Teacher shortages in the Midwest: current trends and future issues*. Retrieved March 4, 2004 from, http://www.ncrel.org/

Ogden, W. R. (2002). The real crisis in the classroom: Where have all the teachers gone. *Education*, 123(2), 365-369.

Partridge, E., Slaton, E., & Wadlington, E. (1998). Alleviating stress in pre-service teachers during field experiences. *Education*, 119(2), 335-348.

Perkins-Gough, D. (2003). Keeping good teachers. *Educational Leadership*, 60(8), 96.

Pierson, D. E. (1998). A model of a pre-service teacher preparation program. *Education*, 118(3), 327-329.

Schumacker, L. G., & Thomson, G. W. (1998). Selected characteristics of the national ffa organization's agriscience teacher of the year award winners and their agriscience programs. *Journal of Agricultural Education*, 39(2).

Schmitz, G., Schwarzer, R., & Tang, C. (2001). Mental health outcomes of job stress among chinese teachers: Role of stress resource factors and burnout. *Journal of Organizational Behavior*, 22(1).

Smith, N. B. (1999). A tribute to the visionaries, prime movers and pioneers of vocational education. *Journal of Vocational and Technical Education*, 16(1).

Stewart, C. (2003). An empirical assessment of Michigan secondary agricultural educators use of the service learning model. Master's Dissertation.

Troman, G. (2000). Career under stress: Teacher adaptations at a time of intensive reform. *Journal of Educational Change*, 1(3), 253-257.

U.S. Department of Education, Office of Policy Planning and Innovation, *Meeting the Highly Qualified Teacher Challenge: The Secretary's Second Annual Report on Teacher Quality*, Washington, D.C., 2003. Retrieved March 11, 2004 from, http://www.ed.gov/about/reports/annual/teachprep/2003title-ii-report.pdf

Van der Linde, C. (2000). The teacher's stress and its implications for the school as an organization: How can tqm help. *Education*, 121(2), 375-382.