PARTICIPANT PERCEPTIONS OF THE OKLAHOMA

STATE UNIVERSITY PECAN MANAGEMENT

COURSE AND E-LEARNING APPROACH

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OKLAHOMA STATE UNIVERSITY PECAN

MANAGEMENT COURSE AND E-LEARNING

APPROACH

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CHAPTER I

INTRODUCTION

Background

   Over the past nine years, the Pecan Management team, consisting of Oklahoma State

University specialists, has educated and trained over 300 growers, extension educators

and homeowners on best management practices related to pecan management. These

classes consume an average of about 30 hours per instructor over the course of the nine-

month teaching period. For project leaders, coordination and educational time can easily

take over 100 hours per year.

   Participants receive traps, leaf and soil sample analyses, a reference notebook, other

books and educational materials with detailed information on Integrated Pest

Management (IPM), cultural practices and current research information.

   Based on the scope of this short course in pecan management and its success over the

past nine years it has been well received; however, it occupies a great deal of time, effort

and expense to coordinate and deliver. Unfortunately, every year participants evaluating

the course complain about the necessity of extensive traveling to the teaching facility.

Although time and travel constraints are major concerns, there are many repeat

participants each year. Typically, these repeat attendees represent the program's most

active participants, simply because many of them have now moved from beginning

production into more experiential learning on their own. At this point, these latter

growers have a different information need and a more refined appreciation of what questions to ask. While it would seem that such a mixture of clientele may be disruptive to the flow of the class, repeat attendees provide pertinent questions that help supplement the discussion for beginners. In 2004, an accompanying online e-learning version of the course was initiated to potentially alleviate some of the time, cost and travel issues facing the course (Stafne et al. 2006).

Introduction

The nature of the information age and communication are continually changing. Technologies previously thought of as state of the art are now the norm, while new technologies are being developed daily. Advances in computer technology and telecommunications have made possible the development of learning elements such as video transmission, e-mail, Internet and the World Wide Web (*WWW*). The progression of distance learning from college correspondence courses, teleconferencing over phones and modems, transporting still pictures with interactive audio, to the latest technology of two-way full audio/full video communication has shown great promise, not only for public education, but any education system wishing to reach a diverse group of people in a wide geographic area.(Horizons, 2004).

The term *e-learning* can mean many things. In its general application it is the use of information and communication technologies, including the internet and WWW, to improve, enhance, accompany and support teaching, training and learning. For colleges it may allow students that could not normally attend campus classes the opportunity to pursue further education at a distance. For other educators such as those in Career and Technology Centers and Cooperative Extension whose main audience tends to be adults,

it creates more opportunities for those wishing to simply expand their knowledge, continue their education, learn a new skill or train for a new career. Traditionally, the only choice for students or adults seeking further training or education was to take courses through a college or technical school and physically attend the course. This mode of continuing education often made things difficult for many students because of the time away from family or job in order to get a degree or continue training. By utilizing new technologies *distance education* has allowed educators to reach a broader more diverse audience, create more flexibility, allow for learning at their own pace and close the gap between those who have not been able take advantage of previous educational opportunities.

E-learning was born during the explosion of the early nineties when Internet access started to expand (Penn State University, 2005). Recently, the term e-learning has become more popular with industry and business sectors for training current employees while in the workplace and university settings it has provided additional opportunities for potential students from all backgrounds and from almost any geographic location. In 1999, figures revealed that more than 50 % of U.S. college students had internet access in their dorms, 50 % accessed the internet daily and more than 90 % accessed the internet at some point in their college career (Penn State University, 2005). Just a few short years ago, around 40 % of all colleges used some form of Internet resource for teaching courses. Currently and in the future, these statistics have and will undoubtedly increase due to advances in technology and internet capabilities. In 2001, 66 % of the U.S. population used the Internet. Ninety-two million U.S. adults (46%) participated in some form of adult education in order to keep their skills current, keep up with job

requirements, earn a new degree or enhance their knowledge (e-learners.com, 2007). Universities, industries and other institutions around the world have begun to realize the benefits and value of distance learning opportunities. Current articles suggest that as much as 65 % of educational institutions offer some form of distance education, with larger institutions having an even greater percent. In addition, more corporations are utilizing e-learning as a cost effective way to train their employees.

While much emphasis is put on the technology involved in distance learning and the constant changes taking place, far less emphasis has been spent on evaluating the human side of learning. A well designed e-learning system can create a great instructional and performance enhanced value. A system lacking certain components can reduce effectiveness and decrease potential benefits from your program. A recent informal evaluation of an online pecan management course revealed that while the number of states represented by the current registrants suggests that an opportunity exists for more extensive utilization of the course, the course has not reached its full potential. Emphasis on issues such as access, previous experience, cost and awareness of the course must be addressed (Stafne et al. 2006). Unfortunately, cost, ongoing technological changes, and labor involved in development all represent limitations to its success. E-learning must involve cognitive learning. However, some experts believe the system is failing (Woodill, 2004). Again, many problems associated with e-learning include start-up issues such as design and development costs leading to potential increased costs to course participants. In addition, accessibility, especially in rural areas, as well as the general perception of the use of new technologies by an older generation of learners is of great concern. Lack of focus on curriculum and understanding factors involved in learning and teaching

associated with technology are just a few of the issues to consider when creating an e-learning program. Learning is not automatic. Learners and instructors must each be prepared for working in an e-learning environment. A new focus incorporating traditional methods and electronic technologies, (*blended methods)* into instructional strategies that include characteristics of interactivity with electronic environments must be addressed. An understanding of learning and the differences in generations of learners must be incorporated into e-learning designs. In coming years, technology is expected to become an even greater part of education**.** In today's economy, a four-year degree is simply a prerequisite to participating in the industries of the future**.** Lifelong learning is now required for survival and economic longevity and technology such as the Internet, video-conferencing and satellite systems make this possible. Even labor-intensive manufacturing jobs have become highly automated and require skilled employees to work sophisticated computerized machinery. Forty-two percent of production and non-supervisory employees in manufacturing and service establishments now use computers (Learnframe, 2000). The new global economy poses even more complex challenges to workers, requiring higher levels of education, computer literacy, critical thinking, information analysis, and synthesizing skills.

With the explosion of the Internet and the interest in the use of e-learning as an alternative or stand alone teaching tool many colleges and corporations around the country are now utilizing e-learning in some capacity. Cooperative Extension is no exception. Access to the Internet and other digital technologies has rapidly become a necessary tool to function in today's highly information-rich society. The Internet is utilized by Americans for a variety of tasks such as business transactions, personal

correspondence, research and information gathering, and shopping. In order for an individual to advance economically, educationally and socially, being technologically literate and up on current trends is even more vital. Now that a large number of Americans regularly use the Internet to conduct daily activities, people who lack access to these tools are at a great disadvantage. Therefore, raising the number of Americans using technology and other services in the digital age is a vitally important national goal (U.S. Department of Commerce, 2000). The phenomenon of individuals lacking digital access is popularly known as the "*digital divide*." The digital divide, as defined by Cyber Outreach (2002), is "the gap that separates those who have access to technology and the Internet and those who do not", a disparity that exists along lines of education, income, and race. Since the role of Land Grant Universities is dissemination of unbiased information, what role can Cooperative Extension play in alleviating the digital divide? In 2005, an evaluative study was conducted to determine if the Cooperative Extension Service can bridge the Digital Divide (Elbert and Alston, 2005). Extension directors throughout every state were surveyed to determine their perception on extension's role in bridging the Digital Divide. While Extension administrators perceived that the gap between rural and urban residents in relation to technology had narrowed, a definite gap continued to exist. Administrators concluded that many communities could benefit and increase access to technology with the aid of Cooperative Extension. Research cited in Elbert and Alston also indicates extension could serve as the change agent for innovation. Additional literature suggests that programs could be developed with various volunteers to reach a more diverse audience such as economically and socially disadvantaged youth and adults, special needs groups, and those whose geographic locations prevents them

from achieving their goals (Elbert and Alston, 2005). It is uncertain if the United States

Cooperative Extension Service on its on is adequately prepared to alleviate the current

digital divide. In light of the unique opportunities presented, however, if Extension is to

serve as a center of learning, technology will no doubt serve a greater role in this

endeavor. Extension personnel will have to be open to change and work with various

learning styles and needs of participants and reevaluate additional training in the area of

information technology. To be able to serve as a model of innovation, extension must

understand that every learner's situation is different and be able to accommodate and be

diverse in their approach to teaching. They must also be better equipped and stay abreast

of current trends and training in using these new technologies. The "Digital Divide" has

become a greater issue of importance across racial, ethnic, economic, and geographic

lines over the past decade as technology continues to advance. The question remains,

what role can the Cooperative Extension Service and it's educators provide in addressing

this growing concern? Can universities enhance their role in the Land Grant Mission in

dissemination of information with the use of these new technologies? In February 2002,

The National Association of State Universities and Land-Grant Colleges (NASULGC)

Extension Committee on Organization and Policy (ECOP) in the report "The Extension

System--A Vision for the 21st Century" established Information Technology as an

initiative. If Cooperative Extension is to expand its role as a quality source for unbiased,

research-based information and education, it must be aware of the growing Digital Divide

throughout the United States and be a leader in providing opportunities for change (Elbert

and Alston, 2005).

Current technologies are providing new opportunities for the delivery and dissemination of information in an effective and efficient manner. As previously stated, many of today's educators from corporate and industry levels to college campuses including those in Land Grant Systems, such as Oklahoma State University (OSU) are aware of the changing needs of its audience and the importance of being diverse in meeting those needs. Administrators recognize the opportunity to incorporate these new technologies into the Land Grant Mission of disseminating information for the good of its citizens.

In 2004, extension specialists in the Department of Entomology and Plant Pathology in conjunction with the Department of Horticulture at Oklahoma State University initiated an interactive pecan e-learning program in conjunction with its existing hands-on course. Similar to the hands-on class, the e-learning portion is designed for two distinct audiences: 1) experienced pecan producers, and 2) first-time pecan producers. The online course was launched to provide another means to help educate growers and assist them with decision making (Stafne et al. 2006). For the experienced producers, the program is designed as a just-in-time reference model. For the first-time producers, the program is structured as an overview to pecan management. The pecan e-learning management program consists of 10-15 hours of web-based training plus 10 hours of classroom training. The program is delivered through the Internet. Estimates from course coordinators anticipate the estimated savings to course instructors will be 20-60% of the time previously dedicated to this class. For project leaders it will dramatically reduce the number of contact hours (by 70-80 hours) required to oversee the course. In addition, this distance learning should provide the added advantage of appealing to a more diverse

audience that find it difficult to travel several hundred miles for a once a month meeting. It will also help provide an avenue for reaching other states that have an educational need, but lack the specialist to devote to such a task. In the first year, an extra fee was charged for the e-learning portion course; however, since that time the e-learning portion has been included with the charge for the traditional course. With all the potential for increased learning, time and cost-savings related to this e-learning course, only 24 participants have paid for the e-learning course (Stafne et al. 2006) and only a small percent of total course participants have utilized the e-learning portion of the course even after including it for free with the regular course.

Problem Statement

In 2007, the e-learning portion of the OSU Pecan Management course began its third year; however, the original classroom program has been in existence since 1997. Informal discussions and annual assessments have produced positive feedback from participants regarding the classroom, hands-on portion of the course. Attitudes regarding e-learning from current and past participants and the reason why the majority of these growers have not utilized the online e-learning portion of the course have not been fully evaluated. Additional information is needed to determine how receptive growers are to utilizing e-learning as an alternative to their learning needs and the reasons why the e-learning course is being underutilized by growers. Although pecan growers are usually well educated; age, access to the Internet, perception of new information/technology, perceived cost and willingness to learn new technological advances may be factors limiting adoption of this learning tool (Stafne et al. 2006).The online portion of the course was designed to be user friendly thereby, enhancing onsite learning and creating a

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more productive atmosphere for the classroom. Many growers in Oklahoma and other states live in rural areas that may have limited access to the Internet. Some feel they do not need further training because of their extensive background in agriculture, while others just don't like to idea of not being able to see and interact with a person face-to-face. Others feel like any additional cost related to current information provided in the hands-on or online course is unnecessary.

Information is critical in providing proper management decisions in pecan production. The use of the Internet has allowed educators to provide this information in a timely and economical means. In addition to commercial growers, pecan production has gained interest in many areas such as alternative or sustainable agriculture, providing additional income for producers as well as incorporation of IPM principles to reduce cost; however, the program still appears to be underutilized by many producers. Unless this trend is corrected, producers stand to lose thousands of dollars in potential income for themselves as well as benefits to the state's economy.

<div align="center">Purpose</div>

The purpose of this study is to examine the attitudes of Oklahoma pecan producers regarding the OSU Pecan Management Course, in particular, the use of e-learning as a supplemental or stand alone training tool.

<div align="center">Research Questions</div>

The questions to be addressed in this study are:

1. What are grower's attitudes and perceptions toward an interactive web-based (e-learning) educational system for pecan production? (Available in real time, with reminders and self-evaluation)

2. What are grower's attitudes on online course content including quality, usefulness, availability and overall opinion of the course, which will be incorporated into the educational program for Oklahoma pecan growers.

3. What are grower's attitudes toward the programs' ability to reduce travel time and cost allowing for more productive meetings and use as a stand alone teaching medium?

Definitions

Asynchronous Learning- self-paced - occurring at different times as determined by the learner. A self-managed learning event is how most adult learners prefer to learn. Most importantly, asynchronous learning offers the dramatic economic impact of making curriculum available 24/7 (Cognitive Design Solutions, 2007).

Deterrent- Something that interferes with or delays action or progress (Webnox Corporation, 2007).

Distance Education- The process of extending learning, or delivering instructional resource-sharing opportunities, to locations away from a classroom, building or site, to another classroom, building or site by using video, audio, computer, multimedia communications, or some combination of these with other traditional delivery methods (ITC, 2007).

E-learning - The delivery of a learning, training or education program by electronic means. E-learning involves the use of a computer or electronic device to provide training, educational or learning material (Intera, 2007).

IPM- A sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health, and environmental risks (NDSU, 2007).

Mixed-Mode learning- also known as hybrid or blended learning, is in the broadest sense, defined or conceptualized as any combination of a wide variety of technology/media integrated into conventional, face-to-face classroom activities (JALN, 2007).

Synchronous Learning- Bringing instructor and student together at the same time in a live event. Synchronous learning involves social learning principles and dynamics, whether the interaction is one-one, one-to-many, or many-to-many (Cognitive Design Solutions, 2007).

WWW- An Internet-based system for the retrieval of information from distributed servers by use of a client or browser. The World Wide Web supports text, graphics and multimedia, and is a key medium for communication, business and entertainment in the Networked World (CyberLaw, 2007).

CHAPTER II

REVIEW OF LITERATURE

Introduction

Recent research on distance education indicates that transfer of information and knowledge is rapidly changing. Many educational efforts, such as those in Cooperative Extension, can no longer rely on traditional face-to-face learning (King and Boehlje, 2000). Learning opportunities must exist for clientele when, where, how, and in what form is best for them. Being able to access information in a timely manner has become a top of priority for many audiences (King and Boehlje, 2000).

Opportunities for adults to access education anytime and anywhere through, *synchronous* and *asynchronous* delivery, is crucial for their success (NIFL 2000). Research suggests, as much as half of all distance learning in higher education, adult education and other programs are directed to students in their homes, the other half is received in the workplace or at a designated program location. In a 2003 article in the Journal of Distance Learning Administration, authors estimated that Americans change careers, on average, every 10 years. This coincides with Labor Department estimate that as much as 40% of the workforce changes jobs every year. The changing nature of the workforce in the information age will require continuous, ongoing training. These workforce statistics don't even take into consideration the numerous programs available for the casual every day learner or those seeking undergraduate or advanced degrees in a

more flexible atmosphere. The changes accompanying the growing demand for lifelong learning will demand short accelerated programs, well-suited for online delivery and personal enhancement (Howell et al. 2003*).*

How accessible are the new technologies? Recent high-technology approaches, such as distance learning and online sources have increased how?, when?, and where?, allowing Extension to reach larger audiences. Are these approaches preferable to traditional delivery means? Many homes, especially in rural areas, are without a computer and those that do have one may be so old that it restricts access of information over the Internet or will not allow for downloading of large files. In addition, increased technology may intimidate some clientele (Rodewald, 2001).

Many variables must be considered when attempting to utilize distance education, especially when utilizing e-learning as an interactive, self-paced means of teaching adults. Cost, perception, interactivity, course quality, and accessibility all play a role in how distance education is received by participants and its effectiveness as a learning tool.

Cost

Economics can play a major role in deciding to use distance education. Development of e-learning tools is time and labor intensive. Perhaps more importantly, these tools can be quite costly. Depending on content, production values, and the programming necessary to put a system together, the cost can easily run into the tens of thousands. While the cost of producing distance education is going down, many administrators and educators still state cost as a major consideration for not using distance education.

In a 2002 study of an on-line insect ID program by the University of Illinois, (Cecil and Feltes) found that there was significant savings when staff did not have to travel to

deliver programs. By eliminating travel miles and hours from faculty and staff using a distance education delivery method, considerable savings are anticipated throughout the entire extension system. In addition, these savings were passed onto participants of the course. It was determined through analysis of costs associated with the course that the expense to participants would be zero compared to a potential thirty plus dollars a person if the course were to be taught on-site at the sixteen various locations (Cecil and Feltes, 2002).

In another study in 1997, County Educators with the Pennsylvania Cooperative Extension service were asked to attend in-service training delivered through distance education. The program was initiated to find out how receptive county educators would be in using this technology to cut down on travel time and expenses related to driving several hundred miles to the campus. The majority of the county staff was receptive to at least some training being delivered by distance, depending on the subject matter. Most of the concerns came from lack of knowledge about distance technology (Kelsey and Mincemoyer, 2001). For the most part, Extension educators appear comfortable with this method of delivery if it matches the appropriate targeted audience and subject matter.

To date, much of the emphasis on cost has been directed on production and development. Less research has been directed to cost savings and efficiency for participants. Cost has been listed in multiple studies as a major factor for participation and still perceived by many as a major deterrent. The cost associated with providing educational programs may be going down, but program participants must still weigh their options and decide if it is worth the cost and effort required by many online programs.

Perceptions

In many situations, distance education appears to be a viable method for Cooperative

Extension in integrating into its educational programming efforts. It is important to

realize that the distance education method chosen must be appropriate for the program

being taught and the clientele being served. Not all Extension programs will be

appropriate for distance learning. As educational practitioners, extension specialists must

have the ability to create the instructional method most appropriate for a given situation.

In addition, educators must possess the ability to accommodate multiple learning styles of

clientele participating in distance education programs. The introduction of mix-mode

learning is becoming more important as technology evolves. Being able to blend online

and traditional teaching methods is essential when trying to incorporate a wide array of

students needs with the numerous types of content to be covered.

Although technology is an integral part in distance education, any successful program

must focus on student needs rather than the technology itself. Successful Distance

Education systems, just as traditional approaches, involve interactivity between teacher

and student, student and the environment, and between students themselves (Sherry

1996).

While there are educator and students alike who are skeptical of quality of online

learning, there are viable studies reporting finding that distance is as effective as face-to-

face teaching, with no appreciable differences in quality of learning (Ricketts et al. 2001).

In 2002, the University of Illinois Extension program conducted a series of continuing

education courses on insect identification in urban and agriculture environments. The

course was designed to provide information on insect identification as well as assessing the receptiveness of using distance education as an alternative to traditional teaching methods (Cecil and Feltes, 2002). Participants rated the delivery method and usefulness of information very high indicating that distance education was an appropriate and viable method for Extension to integrate into it's educational efforts. In nearly every category participants rated the course (from the presenter, to course material and to overall quality) as well above average. Even when slow dial-up or downloads were accessed the participants still found the method useful and stated they would use it again (Cecil and Feltes, 2002).

Other studies agree, indicating cognitive factors such as learning, performance and achievement in distance education classes are comparable with traditional classes (Rivera and Rice, 2002). Even when technological and administrative logistics are not ideal, due to lack of funding or support, satisfaction of students in a traditional class, web-based learning study class, and a mix of the two equitable across the three methodologies.

Although much of the research is centered on student perceptions, educators can have a major impact on Distance Education quality. In 2002, research was conducted at a large state university on teacher and student perceptions of web-based courses. Questions were asked about literature relevant to design of and learning in web-based contexts. A majority, over 60%, felt more engaged than in the traditional classroom. Overall, both students and teachers reflected positive benefits with web-based experiences, and particularly experienced the greatest satisfaction with availability of a variety of online tools that enhanced communication and engagement of the course (Galligni and Barrera, 2002). Other examples of positive perceptions by students and teachers included the use

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of new programs such as blackboard to increase class unity, availability and support (Roval, 2001).

Older Adult Perceptions

A recent area of interest, especially in Cooperative Extension programs, is the attitude of older audiences to new technologies such as e-learning. Many participants in extension programs are older, have been involved in agriculture their entire lives and may think additional education is unnecessary. These clientele tend to wait until a problem arises and then come to educators with questions. Some of these clients may have never experienced the opportunity or willingness to learn new technology; however, this isn't always the case. A recent study reveals many older adults showed similar, strong interest in learning in general and learning the computer in particular. In fact, one participant stated, "The computer is a big part of my life. I'm interested in it. I'm reading about it all the time. I try to keep up with it. I've always been interested in it. There are lots and lots of things you can do on the computer. At this point it's really a large part of my life. I enjoy it. I like to discover things. You know, if you are not learning everyday, then you are dead. You have to try to learn something new everyday, you have to look at different aspects of things, and you have to have an open mind. That's part of life." (Xie, 2007).

Interaction

As distance education continues to develop for delivering educational materials and programs, such as those in Extension, certain issues continue to emerge. In particular, the interaction between student and teacher is a major concern for many considering distance education (Hansen et al. 1999). Will the lack of face to face communication affect the learning process? Is information delivered in a timely, easily achieved manner?

One of the first questions often asked about distance learning is about the lack of interaction between student and teacher. In a study of student perceptions about distance education, this methodology was found to be just as effective as the more traditional face to face method (Diebel et al. 1998). Many students and educators; however, still adhere to the philosophy that face to face contact is needed for proper instruction. In addition, some believe that undergraduates are missing out on key social interaction by utilizing distance education.

In many instances however, studies found that interaction actually increased, because many students felt less intimidated using the Internet as a means of communication (Ezine, 2007).

Some authors reiterate that even though it presents a challenge at times, the use of distance learning can be effective even when there is teacher/student separation and limited technology is available. Even though many positive points can be raised regarding the usefulness of learning or training at a distance, educators must also keep in mind that Distance Education is not for everyone and that some students respond poorly to distance education. Every person and program is different and their educational comfort level may depend on particular style of learning and the subject matter (Tucker, 1999).

In 1999, extension educators in Oregon implemented a computer-based model to train new members of its master gardener program. The model was envisioned as a way for extension educators to reach larger audiences and create a compatible learning environment for adult learners (VanDerZanden et al. 2002). The model is a series of knowledge-based and problem-based learning components, all linked to loop navigation

icons so learners can reinforce their analytical and learning skills. Participants felt the module was a useful training tool for master gardeners and would be a useful addition to annual training. Flexibility and asynchronous capabilities were very well received.

In another study, web-based modules were evaluated in the teaching of introductory college classes in Anatomy and Physiology. The content of the module incorporated user-interfaced design, interactive self-testing and feedback features. In addition, evaluations of user responses to the units were provided. The use of digital photos of anatomical features and processes with flash animations and movies helped in illustrating concepts. Students indicated that learning was enhanced by these modules and roadblocks that usually face distance education students were overcome (Hayes and Allen, 2003).

In 1996, the Arizona Cooperative Extension service was asked to help develop an interactive distance education workshop for participants who work in sports nutrition in their communities. Educators were faced with questions on methods of technology to use, teacher student interaction and timely feedback. The study found that interactive distance education technology makes it possible to reach participants in multiple locations, while minimizing travel for instructors and students. The distance education format, when used with a successful model was found to be as effective as face to face learning (Ricketts et al. 2001).

With advanced learning technology, it is possible for students to utilize experiential activities from computer interactive training models. Problem-based units of learning and other activities can be used to create active learning. Various distance education models differ not only in the types of technology used, but also in the control of the pace and place of the instruction. In some models faculty have primary control, as in traditional

classrooms. Undergraduate students in Georgia used interactive models in their classes and found that they have excellent potential to help understand and apply real world concepts (Kim et al. 2002). Other models allow students to study and take quizzes at their own pace, allowing them to be more prepared for tests in their traditional class meetings.

Course Quality

Quality of learning material and the course itself can be an important concern for prospective e-learning participants. Concerns about quality arise when students start to feel bored, lose interest or simply have a bad experience with the course (either with the material itself or the design). E-learning content should be engaging and include various media types. Several studies based on deterrents to web-based education found concerns about quality of the course ranked as the second most important factor in discouraging participation. Other studies reiterate, poorly designed, generic formats, and not mixing of media types are less engaging to participants and affect the perception of the quality in e-learning.

Accessibility

Many participants of current programs like those in Oklahoma and other states live in rural areas and have no or limited access to the Internet. Since most of the pages being delivered through online courses have photos or other large downloading requirements, this can cause great frustration to the user. Current technologies are being developed to possibly alleviate some of these problems. Satellite-based access for rural users may allow even the most rural of participants the opportunity to utilize current research information and programs (Stafne et al. 2006).

Current Technology

Integrated Pest Management (*IPM*) is an extremely important component of agriculture in the United States. The profitable and environmentally sound production of safe food is a national priority. The Land Grant University's IPM Extension programs around the country have been successful for many years. With cooperation from USDA, producer groups and others, the mission of extension IPM is to educate people about the principles and practices of pest management and encourage the practical and profitable crop protection tactics that are environmentally sound and socially acceptable (Univ. of California IPM, 2002).

A novel approach to this educational practice is the use of the Internet as an information resource. Many universities now use this approach to provide clientele with alternative methods of learning and implementing IPM practices. Electronic technology has evolved into one of the most powerful and universal methods of disseminating educational information and retrieving data (Univ. of California IPM, 2002).

Summary

While many of the newer technologies for distance education are not used by Extension Services, many university web-sites now have interactive models for insect and disease control as well as other options such as management strategies, weather information, and self-tests.

The use of much of this technology is still underutilized, depending on the course content, the type of media used, and the attitudes of educators and or participants.

Research on computers in education is several years behind computer use. Much of the past research has focused on the technological aspects of training or has focused on children, not adults. While more studies are being developed, additional information is needed to discover the effectiveness of distance learning and how it can best be utilized in Extension.

Existing studies are being conducted to assess how learners perceive distance learning. What is the best method to use? How interactive is the coursework? Is their timely feedback? Is the program accessible and is the proper curriculum used. These are just a few of the questions that will need to be answered if the use of e-learning in Extension programs is to be utilized effectively.

By examining the studies that address these types of questions and involving producers in the research process, researchers can better understand the attitudes toward offerings like the OSU pecan management e-learning course. With this understanding, educators hope to be able to adjust their teaching to fit the needs of all producers as well as others that may be involved in the pecan industry.

CHAPTER III

METHODOLOGY

The survey methods used in this study were a questionnaire and a modified nominal group technique. The evaluative-type design was selected because of its ability to provide useful information to decision makers by examining current attitudes, opinions, and practices of individuals, while the nominal group technique allowed for prioritizing perceived problems and needs from current class participants .

Population

The population for the study was identified as present and past participants from the Oklahoma Pecan Management course which are currently utilizing, previously used or had access to the online e-learning portion of the course. The population included participants from three groups for a total of a 267 potential participants. A return of forty-three surveys (n=43) or a rate of (16%) return was achieved.

Instrument Development

The survey questionnaire to be used in this study was developed by the researcher. Questions were evaluated and modified by the OSU Pecan Management Team to meet the research criteria. Questions were developed to include opinions, attitudes, and perceptions on pecan management practices and the use of the accompanying online e-learning version of the course. Questions were worded to protect the anonymity of participants and gain general demographic information and opinions only, such as the

county of operation, size of operation and type of pecans produced. A Likert-type rating scale (Uebersax 2006), 1-5, with one being the worst and five the best was used to gain perceptions and opinions of participants who have used the e-learning version. Yes/ No behavioral questions were also used. In addition, open-ended questions were added in certain areas to allow participants an opportunity to further expand their thoughts beyond the close-ended questions. The open-ended questions were coded to aid in analysis.

A modified nominal group technique was administered to the current class of pecan management participants (Delbecq A. L. and A. H VandeVen, 1971). The nominal group discussion answers were coded in the same manner as the open-ended questions from the survey.

The instruments were submitted to the Oklahoma State University IRB board for approval of research on human participants. It was determined that this study was exempt from IRB involvement for human research; therefore, no consent forms were needed. Documentation of the IRB exempt status is included in the appendices of this report.

The instrument was then pilot tested on participants of the current Pecan Management class to gain feedback on the questions of the instrument, allowing for comments and concerns to be identified on the survey and enabling researchers to modify questions as needed. Due to minimal changes being needed and wanting to gain as much information as possible, the information from this group was also included in the study.

Data Collection

A mailed questionnaire was used because of the convenience and cost efficiency it has in reaching a specific group of geographically dispersed individuals being contacted for information (Creswell, 2002). It also allows for potentially quick data collection and is

easy to use. Previous discussions and feedback from participants indicated that most have a great concern about what happens in their industry, what can be done to improve it and are willing to provide useful information to that end. Participants were able to fill out the survey (in- class current participants) at their convenience and/or return the questionnaire in a pre-paid return envelope.

One of the major disadvantages of the mail survey is response rate. Participants who receive the survey may not see the need for their response and simply not return it. Another potential problem is interpretation of question; there are limited ways for the researchers to explain questions in the instrument.

The use of a cover letter providing information about the questionnaire, its purpose, confidentiality, and the questionnaire itself was provided to each group. In the case of the OPGA group (Okalahoma Pecan Growers meeting attendees) the questionnaire and other information was provided in their registration packets. The in-class group was given the information as part of their regularly scheduled monthly meeting. For participants receiving the survey by mail, postage paid return envelopes were provided. Approximately three weeks after questionnaires were mailed to the survey group, an e-mail reminder was sent.

Modified nominal group information from the current class provided a means of additional input by identifying and describing priority problems and needs associated with the course. Some negative aspects of focus group interviews are finding consensus and preventing one person from dominating the conversation (Delbecq A. L. and A. H VandeVen, 1971).

A modified nominal group discussion was held and information was collected by breaking the class into groups of three to four people and allowing each group time to identify up to five points each regarding the benefits and dislikes of both the traditional hands-on class and the online e-learning version. After the separate groups had listed their five ideas the entire class was able to see what the other groups had chosen as their top five in each category. Finally, each person in the class was given the opportunity to pick their top three in each category.

In addition to the mailed survey for past participants and cooperation from the current class, an opportunity for a convenience sample was identified during the annual Oklahoma Pecan Growers Meeting (OPGA) during the summer of 2007. Since many of the OPGA members have participated or been involved in pecan programs associated with OSU, surveys were presented and participants of the meeting were given the opportunity to provide their perceptions and opinions as well.

Data Analysis

The quantitative data was computed and analyzed using descriptive statistical analysis. Data was analyzed individually and collectively. Means, standard deviation, percentages, and frequencies were used to identify descriptive cohorts.

Open-ended questions and nominal group data were coded into categories related to survey questions such as time, cost, technology, travel etc.

CHAPTER IV

FINDINGS

Results from this research study were generally positive and coincide with the literature. The survey results from forty-three respondents (16% response), in three survey groups mailed (n=16) (15% response), current class (n=12) (100% response), and Oklahoma Pecan Growers Association) (n=15) (10% response), provided a quantitative summary of the OSU pecan management course participant's perceptions regarding the effectiveness and usefulness of the OSU Pecan Management e-learning course. Due to relatively low numbers of respondents only general descriptive statistics (Mean, Standard Deviation, Percentage and Frequency) were used in providing summaries of respondent answer for each question. Responses were summarized by the three survey groups individually and then combined for the total of all responses.

The qualitative information gathered in the modified nominal group discussion from the current class and the open-ended questions from the survey provided additional information and further understanding regarding the usefulness and effectiveness of the e-learning course accompanying the traditional hands-on pecan management course.

General Information

The general demographic information portion of the survey questionnaire allowed respondents to provide some basic information about their operation even if they had not utilized the online e-learning portion accompanying the management course. For current

and past participants, the survey questionnaire focused on participants who were

currently enrolled in the course or who have previously taken the course and had access

to the accompanying online e-learning version. The following tables represent a

summarization of survey information by individual group.

 OPGA Group

    A total of fifteen (10%) surveys were returned at the Oklahoma Pecan Growers

meeting (OPGA). From responses at the (OPGA) meeting the distribution of participants

was as follows; (Northeast) had the greatest number of responses with 53 % (n=8)

followed by (Southeast) with 27% (n=4), (Southwest) with 13% (n=2) and (Northwest)

with 7 % (n=1). The average number of acres in operations surveyed was 137 with a

range from 4 to 750 acres. Sixty-four percent (9) had over 50 acres in pecans while forty-

three percent (6) had over 100 acres in production of pecans.

Table 1. OPGA
Percent Response for General Demographic and E-
learning

Statements:	n	% (Percentage)	Rank
Category best describing your operation:			
Commercial	8	53	1
Homeowner	5	33	2
Other	2	14	3
Type of Cultivars Currently Growing:			
Both	6	40	1
Improved	5	33	2
Native	4	27	3
Interest in utilizing online e-learning version:			
High	1	33.3	
Moderate	1	33.3	
Low	1	33.3	

n=Response per category

Table 2. OPGA
Response for General Demographic and Current
and Past Participant E-learning interest

Statements:	n	% Percentage Yes	No
Material timely and relevant to your operation	15	100	
Since inception, have you taken a management course in which educators from OSU participated	15	60	40
Is this your first pecan management course	7	43	57
Have you taken any online courses before	7		100
If currently enrolled, are you utilizing the free online e-learning version of course	4		100
Would you take another online course	1	100	
Would you recommend this course to others	1	100	
Do you utilize a computer at home or work	2	100	
Does your computer have internet access	2	100	
If required, do you think the e-learning portion could be used as a stand alone teaching medium	2	50	50
Is the e-learning version a cost effective means of delivering the management course to growers	1	100	

n=Response per category

Table 3. OPGA
Frequencies for General Demographic and Current
and Past E-learning interest

Statements:	n	f
Most common resource for Pecan information:		
OSU	15	12
Magazines and news letters (Pecan South)	15	8
Other	15	4
Private Company	15	3
Other Growers	15	3
Self-directed learning	15	2
All the above	15	2
Reason for lack of participation in any OSU sponsored program:		
Self-directed learning	5	3
Time	5	2
Cost		
Travel		
Lack of Information		
Other		
Reason for not utilizing the free online e-learning version:		
Time	3	2
Low/No computer skill	3	1
Cost	3	1
Travel	3	1
Lack of information		
Other		

n=Response per category

Current Class

From the current class, a total of twelve (100%) surveys were returned. Responses

from the current management class were as follows; (Southeast) had the greatest number

of responses with 83% (n=10), followed by (Northeast) with 17% (n=2), (Southwest) and

(Northwest) had no surveys returned. The average number of acres in operations

surveyed was194 with a range from 20 to 500. Seventy-three percent of respondents (8)

had over 100 acres in pecan production.

Table 4. Current Class
Percent Response for General Demographic and E-
learning interest

Statements:	n	% (Percentage)	Rank
Category best describing your operation:			
Commercial	7	64	1
Homeowner	2	18	2
Other	2	18	2
Type of Cultivars Currently Growing:			
Native	6	50	1
Both	5	42	2
Improved	1	8	3
Interest in utilizing online e-learning version:			
High	3	50	1
Moderate	2	33	2
Low	1	17	3

n=Response per category

Table 5. Current Class
Response for General Demographic and Current
and Past Participant E-learning interest

Statements:	n	% (Percentage)	
		Yes	No
Material timely and relevant to your operation	11	82	18
Since inception, have you taken a management course in which educators from OSU participated	12	42	58
Is this your first pecan management course	11	73	27
Have you taken any online courses before	11	18	82
If currently enrolled, are you utilizing the free online e-learning version of course	10	80	20
Would you take another online course	6	83	17
Would you recommend this course to others	6	100	
Do you utilize a computer at home or work	6	75	25
Does your computer have internet access	6	100	
If required, do you think the e-learning portion could be used as a stand alone teaching medium	7	29	71
Is the e-learning version a cost effective means of delivering the management course to growers	7	71	29

n=Response per category

33

Table 6. Current Class
Frequencies for General Demographic and Current and
Past E-learning interest

Statements:	n	f
Most common resource for Pecan information:		
OSU	11	10
Private Company	11	5
Magazines and newsletters (Pecan South)	11	4
Other Growers	11	2
All the above	11	1
Other	11	1
Self-directed learning	11	0
Reason for lack of participation in any OSU sponsored program:		
Time	5	2
Lack of Information	5	1
Self-directed learning	5	1
Other	5	1
Cost	5	0
Travel	5	0
Reason for not utilizing the free online e-learning version:		
Time	2	2
Low/No computer skill	2	0
Cost	2	0
Travel	2	0
Lack of information	2	0
Other	2	0

n=Response per category. f=Frequency

Mailed Surveys

A total of sixteen (15%) surveys were returned. Responses from the survey mailing

regarding the distribution of participants was as follows; (Northeast) and (Southeast) had

an equal number of responses with 42% (n=10) followed by (Southwest)(16%) (n=2) and

Northwest had no surveys returned. There was also one out-of-state respondent. The

average number of acres in operations surveyed was 42 with a range from 2 to 160. Only

(1) or 9% had production acres over 100.

Table 7. Mailed Survey
Percent Response for General Demographic and E-learning interest

Statements:	n	% (Percentage)	Rank
Category best describing your operation:			
Homeowner	9	69	1
Commercial	4	31	2
Other	0	0	0
Type of Cultivars Currently Growing:			
Both	8	62	1
Native	3	23	2
Improved	2	15	3
Interest in utilizing online e-learning version:			
Moderate	3	38	1
High	3	38	1
Low	2	24	2

n=Response per category

Table 8. Mailed Survey
Response for General Demographic and Current
and Past Participant E-learning interest

Statements:	n	% (Percentage) Yes	No
Material timely and relevant to your operation	14	100	0
Since inception, have you taken a management course in which educators from OSU participated	15	80	20
Is this your first pecan management course	13	100	
Have you taken any online courses before	13	62	38
If currently enrolled, are you utilizing the free online e-learning version of course	9	11	89
Would you take another online course	7	100	
Would you recommend this course to others	7	100	
Do you utilize a computer at home or work	10	90	10
Does your computer have internet access	10	100	
If required, do you think the e-learning portion could be used as a stand alone teaching medium	9	56	44
Is the e-learning version a cost effective means of delivering the management course to growers	8	75	25

n=Response per category.

Table 9. Mailed Survey
Frequencies for General Demographic and Current
and Past E-learning interest

Statements:	n	f
Most common resource for Pecan information:		
OSU	15	12
Magazines and news letters (Pecan South)	15	7
Other Growers	15	6
Private Company	15	1
Self-directed learning	15	1
All the above	15	1
Other	15	1
Reason for lack of participation in any OSU sponsored program:		
Other	2	2
Time	2	1
Cost	2	1
Travel	2	1
Lack of Information	2	1
Self-directed learning	2	1
Reason for not utilizing the free online e-learning version:		
Low/No computer skill	4	3
Time	4	2
Other	4	2
Cost	4	1
Travel	4	1
Lack of information	4	1

n=Response per category. f=Frequency

Modified Nominal Group Technique Discussion

Based on responses from the current pecan management class, the following figures

represent perceptions and attitudes of participants about the usage of the online e-learning

portion of the course and comparing it to the traditional class. After breaking into small

groups and identifying their group's five most important benefits and five most important

deterrents from both traditional and e-learning versions, respondents were given the

opportunity to look at all the group listings in each category and determine the top three.

Responses were also broken into users and non-users of the e-learning version.

Being able to network with others was listed as the top benefit in a traditional class setting while travel was listed as the top deterrent (Figures 1 and 2). Flexibility and no travel were listed as the top benefits of the online version of the course while immediate feedback, especially among non-users was listed as the top deterrent for online teaching (Figures 3 and 4).
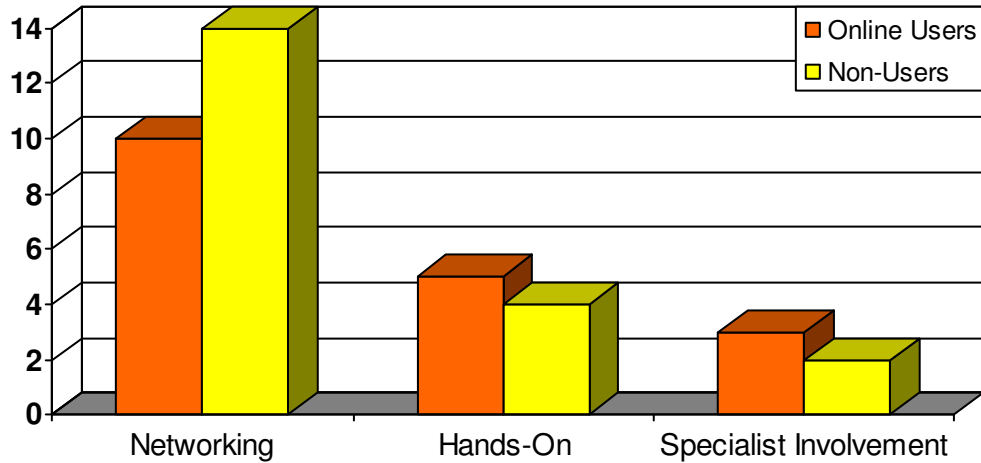

Figure 1. Current Class Nominal Group Discussion:
Top Three Responses to
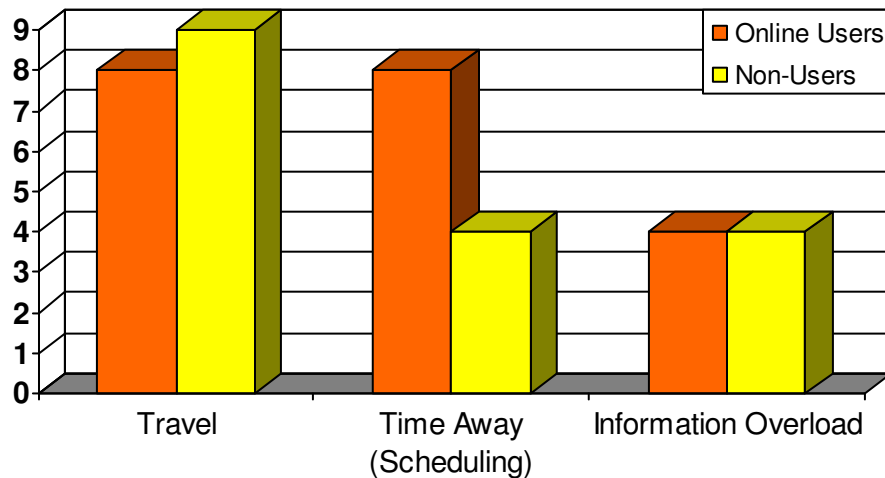Traditional Class Positives/Benefits by Online Users and Non-Users.

Figure 2.Current Class Nominal Group Discussion:
Top Three Responses to
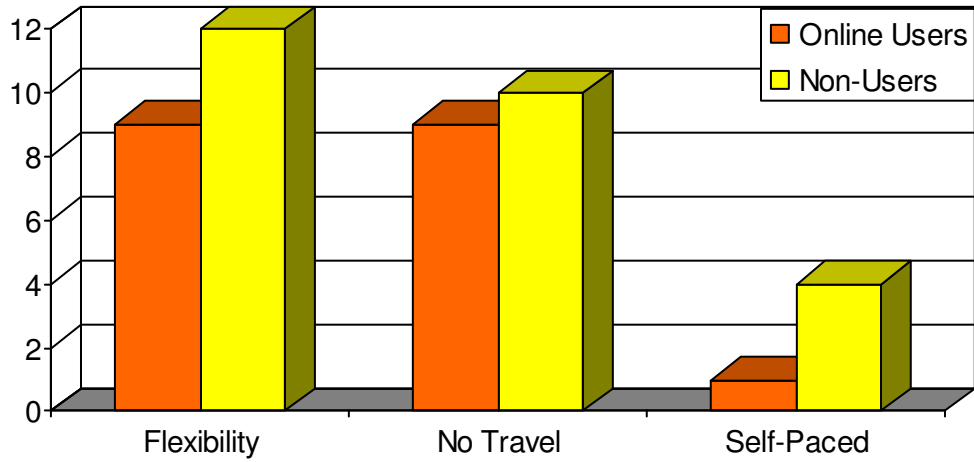Traditional Class Deterrents/Dislikes by Online Users and Non-Users.

Figure 3. Current Class Nominal Group Discussion:
Top Three Responses to
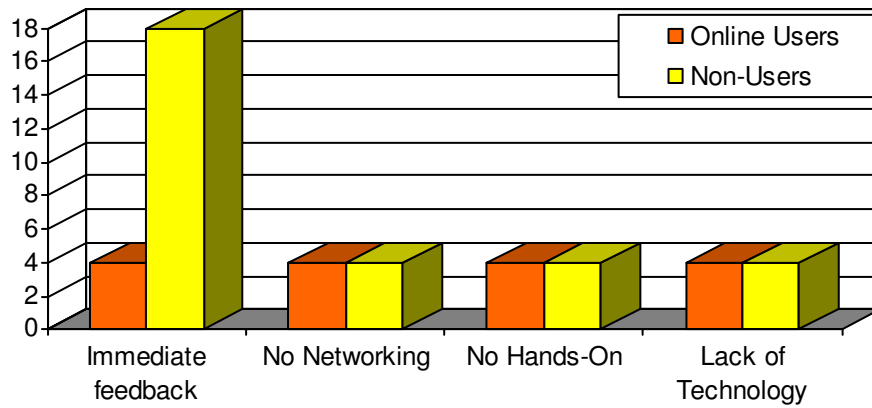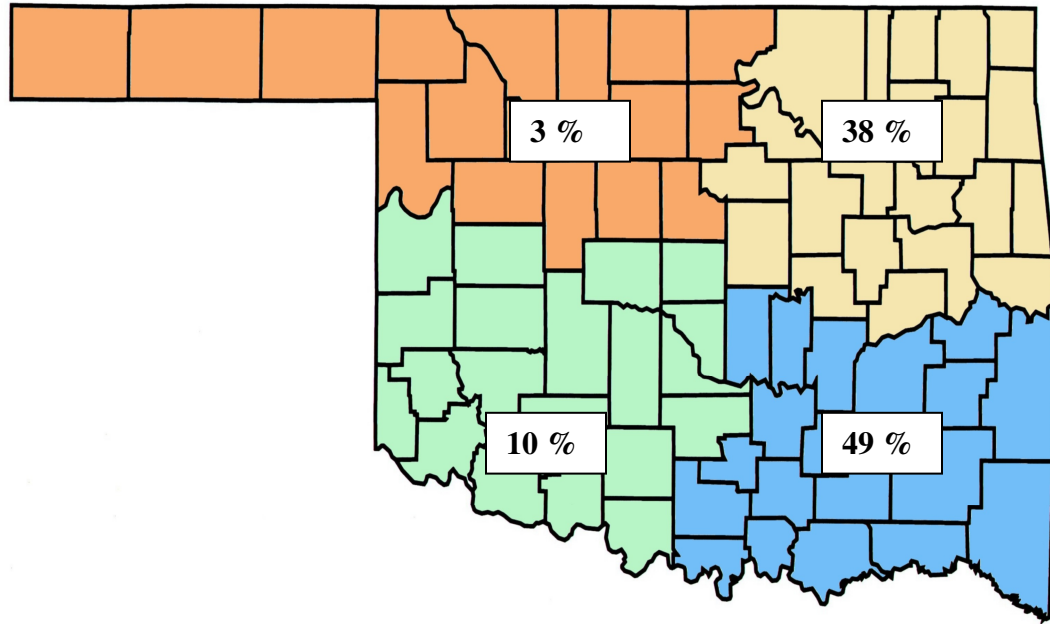E-learning Positives/Benefits by Online Users and Non-Users.

Figure 4.Current Class Nominal Group Discussion:
Top Four Responses to
E-learning Deterrents/Dislikes by Online Users and Non-Users.

Figure 5. Distribution of Respondents by District (All Groups)

Research Questions

In addressing the research questions, individual responses from all groups were combined to determine overall opinions and perceptions. A total of forty-three surveys were retuned from all groups for a (16%) response. In the general information section of the survey, there were thirty-nine responses to the question regarding distribution of participants; (Southeast) had the greatest number of responses with 49% (n=19) followed by (Northeast) with 38% (n=15), (Southwest) 10% (n=4) and (Northwest) with 3% (n=1), Figure 5. The average number of acres in operations surveyed, for those responding was 124. The majority of respondents were commercial operators, 49 % (n=19), while 41% (n=16) were homeowner managed and 10% (n=4) other, (Table 10). The average age for all respondents was 54. Forty-seven percent of respondents stated they grow both native and improved cultivars (n=19). Thirty-three percent grow native pecans exclusively (n=13) while 20% (n=8) grow improved cultivars.

Table 10. Total
Percent Response for General Demographic and E-
learning interest for All Groups

Statements:	n	% (Percentage)	Rank
Category best describing your operation:			
Commercial	19	49	1
Homeowner	16	41	2
Other	4	10	3
Type of Cultivars Currently Growing:			
Both	19	47	1
Native	13	33	2
Improved	8	20	3
Interest in utilizing online e-learning version:			
Moderate	9	44	1
High	7	33	2
Low	4	23	3

n=Response per category

Table 11. Total
Response for General Demographic and Current and
Past Participant E-learning interest for All Groups

Statements:	n	% (Percentage) Yes	No
Material timely and relevant to your operation	40	95	5
Since inception, have you taken a management course in which educators from OSU participated	42	60	40
Is this your first pecan management course	31	68	32
Have you taken any online courses before	32	22	78
If currently enrolled, are you utilizing the free online e -learning version of course	23	39	61
Would you take another online course	15	93	7
Would you recommend this course to others	14	100	
Do you utilize a computer at home or work	20	85	15
Does your computer have internet access	19	100	
If required, do you think the e-learning portion could be used as a stand alone teaching medium	18	45	55
Is the e-learning version a cost effective means of delivering the management course to growers	16	75	25

n=Response per category

Research Question One.

   The overall perception of the monthly course was positive. In general, growers found

the pecan management class and educational information very useful. When asked where

they received most of their educational information OSU programs or fact sheets were

the most commonly listed response. Thirty-eight or 95 % said this information was useful

and relevant to their operation. When asked if they had ever taken an OSU managed

course, 25 or 60% said yes, (Table 11). From open-ended question one, "the most cited

reason for not participating in any OSU sponsored program", was time and self-directed

learning. When current and past users having access to the new e-learning technology

were asked if this was their first pecan course, 21 or 68% said yes, and of those

responding many had taken the class more than once. Seventy-eight percent or 25 had not

taken or been involved in any online course before. Sixty-one percent or 14 respondents

stated, even though they are currently enrolled in the course they still haven't used it. In

open-ended question two, again, the most cited reason for not utilizing the free online

version currently offered was time. However, 44% (n=9) rate their interest high and 33%

(n=7) moderate in using or learning more about the new technology. Fourteen or 93% of

respondent said they would take another online course, and 14 or 100% would

recommend to a friend or co-worker. Seventeen or 85% use a computer at home or work

and all respondents (n=19) had Internet access. From open-ended questions three, the

most often cited benefit to using the e-learning version is using it as a reference tool.

Finally, the last open-ended question revealed the most often cited suggestion about

improving the course as technology issues such as slow dial-up and updated web-links,

(Table 12).

Table 12. Open-Ended Questions All Groups

Statement:	n	f
Reason for lack of participation in any OSU program:		
Time	12	5
Self-directed learning	12	5
Other	12	3
Lack of Information	12	2
Cost	12	1
Travel	12	1
Reason for lack of utilization of free online e-learning version:		
Time	10	6
Technology	10	4
Cost	10	2
Travel	10	2
Lack of Information	10	2
Other	10	2
Additional benefits from using online e-learning version:		
Reference Tool	6	3
Learn on my own	6	2
Practical useful information	6	1
Suggestion/thoughts about improving the e-learning course:		
Technology issues (download times, links, modem	7	3
Cost	7	2
Course content/format (variety)	7	2

n=Response per category, f=Frequency. Some respondents chose
multiple reasons per category.

Research Question Two.

E-learning Users

There were a total of 16 responses from all surveys (n=43) indicating the utilization of

the online course. Of the 16 respondents, only two respondents left three or more

questions unanswered.

The following summary represents the total of responses from e-learning users from

all groups. Overall, the e-learning user's perceptions to the e-learning portion of the

course were positive, with all categories rating above average on a 1-5 scale with five

being the best. Results depicted in Table 13 represent the total of all responses from e-

learning users from surveys given to all groups identifying how they felt about the use of

the e-learning portion of the course. All categories received above average rankings.

When rating the quality of the course, content and utility tied at 3.73. In looking at the

usefulness of the e-learning version, technology and breadth of coverage had the highest

ratings at 3.73. The availability of the instructor or other educators rated well above

average at 4.08. The overall e-learning course perception was rated at 3.80.

Table 13.
E-learning users average ratings of the e-learning course.

Statements:	Mean	SD
Quality of:		
Content	3.73	.80
Usability	3.73	.96
Usefulness	3.60	.91
Usefulness of:		
Technology	3.73	.88
Breadth of information covered	3.73	.88
Exercises	3.60	.91
Linked Websites	3.53	.96
Availability:		
Instructor Contact	4.08	.95
Course	3.73	.88
Overall, the course was:		
The overall e-learning course perception	3.80	.46
Compared to traditional classroom	3.60	1.06

Note. 1-Very Poor, 2- Poor, 3-Average, 4-Good, 5-Excellent

Research Question Three.

Currently, the cost of the online e-learning portion of the course is included in the

monthly course registration fee. When asked what they would pay for the class if were

not free a total of fifteen respondents answered the question with a range from zero to

$250.00. When asked if they thought the course could be used as a stand alone teaching

medium for the pecan management course, 10 or 55% said no. When asked if they

thought the online e-learning version was a cost effective means of delivering the

program, 12 or 75% said yes, (Table 11).

Table 11. Total Response for General Demographic and Current and Past Participant E-learning interest for All Groups		% (Percent)	
Statements:	n	Yes	No
Material timely and relevant to your operation	40	95	5
Since inception, have you taken a management course in which educators from OSU participated	42	60	40
Is this your first pecan management course	31	68	32
Have you taken any online courses before	32	22	78
If currently enrolled, are you utilizing the free online e-learning version of course	23	39	61
Would you take another online course	15	93	7
Would you recommend this course to others	14	100	
Do you utilize a computer at home or work	20	85	15
Does your computer have internet access	19	100	
If required, do you think the e-learning portion could be used as a stand alone teaching medium	18	45	55
Is the e-learning version a cost effective means of delivering the management course to growers	16	75	25

n=Response per category.

CHAPTER V

CONCLUSIONS

As demand for cost-effective, anywhere-anytime-education and training continues to

evolve, e-learning will undoubtedly remain at the forefront of the conversation to resolve

these needs. Universities and Extension educators must remain open to the possibilities of

using new technologies to their advantage. Currently, it appears that e-learning has not

caught on with many of the more traditional Cooperative Extension groups. This study

was developed to expand upon previous evaluations of the monthly traditional

(Oklahoma State University) pecan management course and gain perceptions and

opinions about the newly developed online e-learning version now accompanying the

course. Secondly, for users of the e-learning version, respondents were asked to rate the

quality of various areas of the online versions such as technology, course content and

availability of instructor. Finally, can the online version be used as a stand alone teaching

medium and provide a cost efficient means for delivering the course.

Research Question One.

    What are grower's perceptions toward the Pecan Management Class and interest in the

incorporation of an interactive web-based (e-learning) educational system for pecan

production? Certain questions throughout the survey focused on addressing how

producers felt about the management course and the introduction of e-learning as a

supplemental teaching tool. The overall perception of the monthly hands-on course was

positive. Growers find the class and educational information very useful and, as seen in

Table 14, the majority receive their information from OSU sources. In the first open-

ended question, and throughout the rest of the survey, perceptions regarding the online e-

learning version of the course began to develop and a definite theme arose. Growers

identified <u>time</u> as a major factor for not attending any OSU-sponsored program. Also,

respondents stated that being able to do their own self-directed learning and find their

own answers was very important to them. These types of responses reiterate literature

findings from previous evaluations that many growers prefer a hands-on approach and

may not feel the need to attend additional classes (Stafne et al. 2006).

Table 14. Most Common Sources for Pecan Information	n	f
<u>Most common resource for Pecan information:</u>		
OSU	41	34
Magazines and news letters (Pecan South)	41	19
Other Growers	41	11
Private Company	41	9
Self-directed learning	41	5
All the above	41	4
Other	41	4

n=Response per category, f=Frequency. Some respondents stated multiple resources.

Interest in using the accompanying online e-learning version of the course varied. While over half, 61%, stated they had never utilized the online version 44% had a high interest and 33% a moderate interest in at least looking or trying the online version at some point. In open-ended question two, <u>time</u> was also given as the number one reason for not utilizing the free online version currently offered with the course. These findings support other research that even with the advances in technology currently available, time is still considered a major *deterrent* to participation of many adult learning activities regardless of method used (Parker, 2004). Another issue that ranked fairly high for respondents was based on technology. Several respondents noted that poor Internet connections, home service or simple lack of knowledge of the computer and internet was a major problem for them in using the online version. This contradicts some research that suggests technology concerns are not a strong deterrent to e-learning participation (Parker, 2004). In these studies, since participants did not rate technological difficulties as high as other deterrents, researchers concluded participants didn't feel like it was as big of a concern even when faced with issues such as low computer capabilities and lack of support. However, previous informal discussions from various producer groups around the state, including the pecan group, have indicated technology does play a major role in how Oklahoma growers feel about using or incorporating online or e-learning technology.

Other statements about the online e-learning version that were noted from the survey, but not necessarily from open-ended questions were:

- I enjoy hands-on learning.

- Preferred the live class, found online course unhandy, pages won't print.

- Quit because of duplication from class.

- I use it for reinforcement.

- Personal research opportunities.

- Enjoy extra information.

In a 2003 survey, of the responses, 67% of respondents were over 55 years old compared to the current, 2007 study (63%) of respondents were in this same category (n=41). In 2003, 43% of respondents had no access to the Internet and 21% used it very sparingly (OCES, 2003). Also in 2003, 51% of respondents indicated they have no interest in taking an online course.

In 2006, an informal evaluation by the pecan management team identified perceived problems associated with the online course. The perceived problems identified areas such as low computer literacy, no/poor Internet access, download times, grower experience, high cost, and lack of awareness. Some of theses problem areas were identified from a 2003 independent survey before the current online version was incorporated (Stafne et al. 2006).

In this study, potentially promising information was discovered. Most respondents are aware that the e-learning version exists. The attitudes and potential e-learning usage revealed 14 or 93% of the respondents who were looking at or utilizing the e-learning version said they would take another online course and would recommend it to others. Also potentially promising is the fact that 17 or 85% of respondents currently use a computer at home or work and all respondents (n=19) had internet. Therefore, computer literacy appears to not be an issue for most pecan growers. The big question of interest is whether or not they choose to utilize this technology as a learning tool. While cost is an

issue for some, it does not appear to be as big of a concern for most growers, 12 or 75%

think the online version is a cost effective means of delivering the program, however;

perception of using it as a stand alone teaching medium was slightly negative, with 10 or

55% saying no suggesting this would not be prudent. Most pecan growers, at least to this

point, seem to visualize the e-learning version as a reference tool, something they can go

back to after the hands-on class and review on their own. One interesting addition to

potential deterrents to using the online version is class content. Several respondents noted

that adding variety to the class would help with the monotony and boredom that

sometimes accompanies sessions that last over a longer period of time. This response

coincides with literature that suggests that for learning to be effective, course content

must of be of interest to participants whether in traditional face to face classes or e-

learning courses. Finding ways to keep the class involved, engaged, and making sure it is

relevant and useful is very important (Parker, 2004).

Many of the potential deterrents identified in this study are similar to what is found in

any learning environment. Issues such as time, cost, relevance, quality, and technical

problems all can play a major role in whether participants choose to participate in

educational or learning type situations. The incorporation of an online aspect or e-

learning offering into the curriculum doesn't appear to change these perceptions.

Responses from the modified nominal group discussion with the current class

reiterated much of the information received from surveys. The top negative reason listed

for the monthly class and top benefit for the e-learning class were both <u>time</u> related. Time

away from work or home and time spent traveling to meetings for the monthly class and

flexibility of time and no travel were benefits of the online class. Even non-users of the e-

learning version recognize the flexibility and scheduling benefit potential of the e-learning course. However, lack of networking and being able to have immediate feedback were also identified as potential deterrents to online usage.

While many of the pecan growers recognize the opportunity and are open to the possibilities that online learning presents it is still unclear what the future holds for e-learning. It appears that many pecan growers, at least for now, enjoy having the resource available, but mostly as a reference tool to be able to go back to and review as identified in open-ended question three. Most like the idea of being able to reference and do research on their own, but still like the hands-on/face-to-face component of the classroom setting. Being able to network with colleagues and extension personnel is very important to them. Also, since many class participants are new to the industry, they like the idea of having the educator in the classroom where their questions can be answered immediately. Computer usage and literacy does not appear to be as big of a deterrent as once was thought. Technology issues, however, such as slow dial-up connections and download times indicated in open-ended question four, are still critical issues. Several participants felt like variety of course content is needed to keep their attention. In long sessions, boredom may easily set in, so blending of online and in-class educational methods may be needed to incorporate into the current curriculum. While many factors must be addressed in determining what makes a good educational program whether traditional or online, time still appears to be a major issue. As in this study, time is still listed in many articles and typically surfaces as the number one reason for nonparticipation in many adult learning activities.

Research Question Two.

Of respondents who used the online version of the course (n=16), what are their attitudes on the e-learning course's content? Categories were developed to include areas such as quality, usefulness, availability and overall opinion of the online course. Overall, the e-learning user's perceptions to the e-learning portion of the course were positive, with all categories rating above average. While all categories rated above average the true impact of the e-learning portion may not be known. While only 16 or (37%) of respondents filled out information regarding their experience with the e-learning portion of the course, the information provided was positive. Overall, users appeared to be mostly satisfied with the quality of the course's content and usability, with the usefulness of the e-learning course rated slightly lower. These responses may further reflect the discussion and open-ended questions response to the importance of relevance of material and content variety. The usefulness of exercises ranked last in that category indicating again that responses may coincide with research shifting attention to mix-mode learning, variety of materials, and content relevance, all of which are important factors in online utilization. Also, technology issues such as updated linked websites and other technological issues such as course availability were also rated much lower than other factors. The highest rating for all categories was 4.08, in reference to the availability of the instructors for questions and feedback needed by participants. Again, this reiterated previous responses that networking and feedback are very high on the list of needs by course participants. When e-learning participants were asked to compare this delivery system with the traditional classroom the response was slightly above average at 3.6, suggesting that online e-learning users considered the online version comparable to the

traditional class. When asked about the overall e-learning course perception the average was 3.8, indicating participants who have tried the e-learning version were optimistic that the online course could assist them in meeting their educational needs. While all of responses were above average regarding e-learning usage, the perceptions of the e-learning categories are not where educators or potential users would like them to be. They do, however, show value and the potential for further e-learning usage. Since all categories rated above average it shows promise that those who did utilize the online course got some benefit from it and by modification and adjustment in a few areas this offering could greatly increase its value to growers.

Research Question Three.

What are grower's attitudes toward the e-learning program's ability to reduce travel time and cost allowing for more productive meetings and use as a stand alone teaching medium? Currently, the cost of the online e-learning portion of the course is included for current class members. In addition, since 2004, course participants or others have had the opportunity to use this technology with the class or online only at a reduced price. Then why have only a small portion of growers utilized this resource? When asked what they would pay for the class if it were not free a total of fifteen respondents answered the question with a range from zero to two-hundred-fifty dollars. When asked if they thought the course could be used as a stand alone teaching medium for the pecan management course, 10 or 55% said no. When asked if they thought the online e-learning version was a cost effective means of delivering the program, 12 or 75% said yes. It appears most growers feel that the online version could be a cost effective means to deliver the course;

however, over half do not feel the course could be used as a stand alone medium for delivery. Reasons for these perceptions are probably related to previous discussions in this study. Time, cost, relevance, quality, and technical issues all pose problems. While many see online versions as having some usefulness or potential, most growers still prefer the hands-on/ face-to-face contact, networking and instructor availability that is possible a classroom setting. However, with the responses given regarding computer usage and increased interest in the online version, the potential exists for educators and extension specialist to modify teaching strategies (including time management in class), to keep content relevant and to add variety to the course.

Discussion and Recommendations

At this point it appears time and technology issues are two of the biggest hurdles for growers potentially utilizing the online pecan course. While other issues such as course content, relevance, quality and cost were mentioned throughout the survey, growers have indicated that time deterrents related to reduction in travel to and from monthly meetings is definitely at the top of their list of benefits to e-learning and is also at the top of the list of deterrents in taking the monthly class. Being able to schedule learning time at their convenience is considered very beneficial. Other responses regarding the monthly class relate to in-class time. Some feel if class time could be spent on more hands-on activities then the use of the e-learning version might be more useful in a pre-class, post-class type environment, thus allowing users to schedule e-learning at their convenience allowing for more constructive class time. Several respondents indicated they already use the e-learning portion for reinforcement after the hands-on class. If the class could be geared more in this format then participation in e-learning could possibly be increased.

Technology issues are also of great interest. Results from the study indicate most growers are comfortable with computers and Internet usage; however, slow download time and poor service, especially in rural areas poses additional challenges. In addition, some participants feel more updated links are needed to assist growers in the pecan industry, such as chemical and equipment dealers, marketing, not just links with connections to the pecan association. New technologies such as satellite-based Internet are being developed that may allow growers in more rural areas to receive the course. Another option that has been presented is the use of a CD version of the course (Stafne et al. 2006).

Implications

Electronic technology is revolutionizing how we learn, entertain ourselves, communicate, do our jobs, and more. What does it all mean for Extension educators and the clientele they serve? It means that online or e-learning is getting noticed throughout the Cooperative Extension System and may allude to the potential enhancement of Extension's role in an electronic era (Williamson and Smoat, 2005). Traditional thoughts and outreach methods such as peer-to-peer or county-based programming may not be the only option anymore. Exciting new technologies that allow for more interaction and engagement is crucial for many of the programs to succeed. Groups of people in areas once thought of as unreachable now potentially have access to many of the same programs offered on campus. Interactive multi-media and blended learning events, interactive CDs, and other methodologies, with and without the instructor, provide a variety of methods to fit a variety of needs. It also helps in keeping participants focused and engaged in the activity. The e-learning environment is different than face-to-face

experiences that many in extension and other groups (e.g. pecan management group), around the state are accustomed. With these differences come obstacles, and these may also provide insights into the future. This research study suggests that pecan producers are open to change; however, technology issues such as dial-up, download speeds, updated links, content variety, interactivity, and time restraints must be further addressed for the online course to be fully utilized.

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APPENDICES

COVER LETTER

Dear Pecan Producer,

   The Oklahoma State University Pecan Management Team is conducting a survey of pecan growers throughout the state. This research study is designed to evaluate the effectiveness of the Oklahoma Pecan Management Course, with special emphasis on the online e-learning portion of the course and identifying ways to improve on the course's usefulness to producers.

   In order for the course's information and technology to be best utilized, the Pecan Management Team must weigh the costs and benefits of the online version of the course and determine its usefulness as an economical and efficient teaching tool.

   Your pecan operation is one in Oklahoma which is being asked to provide information about their views on the Pecan Management course, with specific emphasis being placed on the usefulness of the online version of the course. Your name was selected from a list of producers who are currently participating in the Pecan Short Course or who have had access to or utilized the e-learning portion of the course in the past.

   To ensure that the results are representative of Oklahoma Pecan Growers, it is essential that as many surveys be completed as possible. By obtaining as much information as possible this will help the Pecan Management Team provide even more useful programs in the future.

   There are no known risks associated with this study. You are assured complete *confidentiality*. Each survey will be assigned a code. (The identification code on the survey is for mailing purposes only). This enables us to check for duplicate surveys when your completed survey is returned in the return envelope provided. Your name will **never** be associated with the answers you provide. In some instances, selected participants from the current class may be asked to participate in Focus Group discussions. Again, complete confidentiality will be adhered to and no names will be associated with the comments given.

   The results of this research will be used by the OSU Pecan Management Team in future decisions about the course. The information you provide will have a direct impact on decisions regarding the course and ways to improve it. Participation in this survey is totally voluntary; you may withdraw from participation at any time. By answering and

returning the survey form, you are acknowledging you understand your rights as a research volunteer and providing your consent to participate.

Thank you for your cooperation.

Sincerely,
Dr. Phil Mulder, Professor of Entomology   Kelly Seuhs, Extension Assistant
Dept. of Entomology and Plant Pathology   Survey Administrator/Principle
                                          Investigator
                                          Oklahoma State University
                                          127 NRC, OSU Campus
                                          Stillwater, Ok 74078
                                          405-744-6456,
                                          k.seuhs@okstate.edu

IRB EXEMPTION LETTER

Mcternan, Beth

From:	Mcternan, Beth
Sent:	Tuesday, May 29, 2007 9:54 AM
To:	Seuhs, Kelly
Cc:	Key, James; Jacobs, Diana
Subject:	IRB application

Dear Kelly:

The IRB received your IRB application, Evaluation of the OSU Pecan Management E-Learning Course. Upon initial review of the application, I have determined that your research does not require IRB review. It does not meet the definition of "human subject" research as it is not gathering information about individuals. The focus of the research is program evaluation. I will return your IRB application to you via campus mail. If you would like documentation of the IRB's decision that no review is required (I recommend this if this is for your thesis or dissertation) then you may complete the Determination of Non Human Subject/Non Research Form found on our web page at http://compliance.vpr.okstate.edu/hsp/Forms.htm .

Also, when you conduct your survey, please remove any reference to the IRB from your cover letter and consent form if you use them. Please feel free to call with any questions.

Best regards,

Beth McTernan
IRB Manager
Oklahoma State University
219 Cordell North
Stillwater, OK 74078-1038
Phone: 405.744.5700
Fax: 405.744.4335
Email: beth.mcternan@okstate.edu

Request for Determination of Non-Human Subject or Non-Research

E. Are the data/specimen(s) coded such that a link exists that could allow the data/specimen(s) to be re-identified?
☐ No ☐ Yes
If "*Yes*," is there a written agreement that prohibits the PI and his/her staff access to the link?
☐ No ☐ Yes

6. **Signatures**

Signature of PI _~~Kelly Seubs~~_ Date _6-20-07_

Signature of Faculty Advisor _~~James P. Key~~_ Date _6/20/07_
(If PI is a student)

☒ Based on the information provided, the OSU-Stillwater IRB has determined that this project **does not** qualify as human subject research as defined in 45 CFR 46.102(d) and (f) and **is not subject to oversight by the OSU IRB.**

☐ Based on the information provided, the OSU-Stillwater IRB has determined that this research **does** qualify as human subject research and **submission of an application for review by the IRB is required.**

~~Sue C. Jacobs~~
Dr. Sue C. Jacobs, IRB Chair

_6-20-07_
Date

Oklahoma Pecan Management E-learning Survey 2007

This survey is being conducted by the OSU Departments of Agriculture Education and Entomology and Plant Pathology, with collaboration from the OSU Pecan Management team. The purpose of this survey is to gain feedback on the usefulness and overall effectiveness of the OSU Pecan Management course offered by Oklahoma State University, in particular, the online e-learning portion of the course. By taking time to fill out this survey you will be helping us to better serve you in the future.
By answering and returning the survey form, you are acknowledging you understand your rights as a research volunteer and are providing your consent to participate.

Instructions: Please answer the questions as they relate to your situation. When assessing the e-learning course, answer or mark the response that best corresponds to your feeling about the course.

General Information

1.) In what county is your pecan operation located?

1a.) If out of state, please list your state.

2.) What is the approximate size (acres) of your pecan operation?

3.) What category best describes your pecan production operation? (Homeowner) (Commercial) (Other)

4.) What is your birth year?

5.) What type of cultivars are you currently growing?   (Native)   (Improved)   (Both)

6.) Where do you currently get most of your Pecan management information/literature from (ie., Oklahoma State University, private company, magazines, other growers, other? Please specify!!!

7.) Has the material you've received been timely and relevant to your operation? Y____ N____.

8.) Since 1997, have you ever taken a pecan management course in which educators from Oklahoma State University participated? Y____N____.

8a). If no, what is the reason for not participating in any of the universities pecan management programs (ie., time, cost, travel, lack of information, other)?

Comments:

* If you have not previously taken or are not currently enrolled in the Pecan Management Course, this concludes your portion of the survey. Thank you for your time.

Instructions: The following portion of the survey relates to participants who are currently enrolled in the course or have previously taken the course and have had access to or utilized the online *e-learning* portion of the course. When assessing the e-learning course, answer or mark the answer that best corresponds to your feeling about the course.

Current and Past Participants

9.) Is this your first Pecan Management Course? Y_____. N_____.

9a.) If no, how many times have you taken or been a part of the management course since its inception?

10.) Have you taken **any** online course before? Y_____. N_____.

11.) If you are *currently enrolled* in the hands-on pecan management course the e-learning portion accompanying the course is free. Are you currently utilizing the e-learning portion of the Pecan Management class? Y____ .N____.

12.) If no, what is the main reason for not utilizing this resource (ie., time, cost, travel, lack of information, other)?

12.a) If yes, do you feel the e-learning course would be worth an additional cost to the enrollment fee?
Y_____. N_____.

13.) How much would you be willing to pay for the online portion of the class, if the e-learning portion was not included?

14.) How would you rank your interest level is in taking or utilizing the online e-learning course accompanying the pecan management class? High…..Moderate…..Low.

Instructions: The following portion of the survey relates to participants who are currently or have previously utilized the online *e-learning* portion of the course. When rating the e-learning course, circle the number that best corresponds to your feeling about the course. If you have not utilized the online e-learning portion of the course, leave the rating portion blank.

> 1---Very Poor, 2---Poor, 3---Average, 4---Good, 5---Excellent

.

E-learning
15.) On a scale of 1 to 5 with 5 being the best, how would you rate the e-learning course?

1 2 3 4 5

The following sections will help describe your experience taking this course online. Base your ratings according to the scale given at the top of this survey. Circle the answer that best fits your feeling about the course.

Rate the quality of:
Content -- 1 2 3 4 5

Usefulness --- 1 2 3 4 5

Usability --- 1 2 3 4 5

Rate the usefulness of:
Exercises (Quizzes) -- 1 2 3 4 5

Linked Websites --- 1 2 3 4 5

Technology --- 1 2 3 4 5
(Website and level of support for
e-learning delivery)
Breadth of information coverage ----------------------------- 1 2 3 4 5

Rate the availability of:
Course --- 1 2 3 4 5

Instructor -- 1 2 3 4 5
(Contacting by email, phone, etc)

Overall, taking the course was:
Compared to traditional classroom -------------------------- 1 2 3 4 5
Convenient ? Y…..N…..

16.) Would you take another online course? Y____N____

16a.) Would you recommend this e-learning course to a friend or colleague?
Y____N____

17.) Do you utilize a computer at home or at work? Y___. N___.
17a.) If yes, does this computer have internet access? Y___. N___.

18.) If required, do you think this e-learning course could be used as a stand alone teaching medium for the pecan management course? Y___. N___.

19.) Do you feel like the e-learning course is a cost effective means of delivering this program to pecan producers? Y___. N___.

20.) What benefits did you receive, in addition to the monthly in-class course, by utilizing the e-learning course?

21.) Do you have any suggestions for improving the e-learning course?

Please **Return** *the survey to the OPGA registration table. Thank you for your time and effort in completing this survey.*
Kelly Seuhs
127 NRC
OSU Campus Stillwater , OK 74078.
405-744-6456

VITA

Steven Kelly Seuhs

Candidate for the Degree of

Master of Science

Thesis: PARTICIPANT PERCEPTIONS OF THE OKLAHOMA STATE

UNIVERSITY PECAN MANAGEMENT COURSE AND E-LEARNING APPROACH

Major Field: Agricultural Education

Biographical:

Education: Graduated from Cache High School, Cache, Oklahoma in May
1984; received Bachelor of Science degree in Animal Science and
Agronomy from Cameron University, Lawton, Oklahoma in December,
1988. Completed requirements for the Master of Science in Agricultural
Education at Oklahoma State University, Stillwater, Oklahoma in
December, 2007.

Experience: Raised on small family farm near Saddle Mountain, Oklahoma;
involved in wheat, hay and cattle operation with parents. Began work as
Extension Assistant in the Department of Entomology and Plant
Pathology in the Spring of 2001 to present working on insecticide
evaluations and educational reports pertaining to alfalfa, pecan, peanuts,
and fruit tree production around the state.

Name: Steven Kelly Seuhs   Date of Degree: December, 2007

Institution: Oklahoma State University   Location: Stillwater, Oklahoma

Title of Study: PARTICIPANT PERCEPTIONS OF THE OKLAHOMA STATE

UNIVERSITY PECAN MANAGEMENT COURSE AND E-LEARNING APPROACH

Pages in Study: 70   Candidate for the Degree of Master of Science

Major Field: Agricultural Education

Scope and Method of Study: The purpose of this study was to examine the attitudes and
       perceptions of current and past participants regarding the OSU pecan management
       course, in particular, use of the accompanying online e-learning version and its
       potential for a stand alone teaching tool. Respondents were given the opportunity
       to express their attitudes and opinions by survey and nominal group discussions
       for current class participants. Data from all groups were combined and results
       presented with descriptive statistics.

Findings and Conclusions: Overall, the perception of the pecan course is mostly positive.
       Time and technology issues still appear to be the major concerns for potential
       online users. While most participants feel the need for in-class personal
       interaction is of vital importance, many feel the online version can have some
       usefulness, especially as a reference tool.

ADVISOR'S APPROVAL: <u>James P. Key_____</u>