

Enhancing Limited-Resource Farmers' Economic, Environmental, and
Social Outcomes Through Extension Education

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ABSTRACT

This research examined how the North Carolina A & T State University Cooperative Extension program has helped limited-resource farmers realize economic, environmental, and social outcomes through its 1890 Extension education program. Since 1990, there has been little research on recent contributions of 1890 Extension programs for this audience. This inquiry described educational collaborative efforts among the North Carolina A & T Extension program, North Carolina State University (NCSU), other 1862 land-grant universities, community-based organizations, and government agencies providing nonformal education and services to limited-resource farmers. Personal interviews were conducted with two Extension specialists, one associate, two agents, and two agricultural and natural resource technicians. A focus group was conducted with nine limited-resource farmers.

The findings revealed that the Farmers Adopting Computer Training (FACT), Plasticulture, and Pastured-Swine programs have helped enhance limited-resource farmers' economic, environmental, and social outcomes. In addition, the participants confirmed caring, trust, and relationship building as qualities that encouraged their participation. However, participants indicated that scheduling

Extension programs that conflict with planting and harvesting season and programs that do not address farmers' needs and issues prevent their participation in Extension programs. Furthermore, North Carolina A & T Extension programs involved farmers in program planning through advisory committees and mentoring other farmers. Participants indicated that NC A & T collaborates with North Carolina State University, community-based organizations, and other government agencies to meet the needs of limited-resource farmers.

The data suggest that the following improvements and changes for the North Carolina A & T Extension program: (a) use the outcome-based evaluation approach to evaluate Extension programs, (b) provide training for Extension faculty on program planning models, (c) continue the FACT, plasticulture, and pastured-swine production programs, (d) educate faculty in other schools and colleges at NC A & T State University about Extension programs, and (e) develop joint programs with other schools and colleges at North Carolina A & T State University.

DEDICATION

“You may fill your head with knowledge or skillfully train your hands, but unless it is based upon high, upright character, upon a true heart, it will amount to nothing. You will be no better than the most ignorant.” Booker T. Washington

I dedicate my dissertation entitled “*Enhancing Limited-Resource Farmers’ Economic, Environmental, and Social Outcomes Through Extension Education*” to my mother, DeLois Westbrook; sister, Sandra Bogans; brother, Tyrone Westbrook, and nephew, Xavier Westbrook. I would like to thank my family for their support and encouragement during my undergraduate and graduate studies.

Secondly, I dedicate my dissertation to other family members and friends for their words of encouragement throughout the dissertation process. Additionally, I dedicate my dissertation to my family members who are deceased but are always present in my heart and looking down from heaven.

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Chapter 1

Introduction

The 1890 Extension programs located at public land-grant universities have provided valuable nonformal education to African Americans and limited-resource audiences since Booker T. Washington arrived at Tuskegee University in 1881 (Mayberry, 1991). Even though these universities are committed to racial integration, they continue to provide meaningful access to formal and nonformal education for limited-resource African American youth and adults. From humble beginnings, the 1890 land-grant universities have developed into major providers of Extension, research, and teaching for this population (Williams & Williamson, 1985).

The 1862 Morrill Act

In the late 1840s, Jonathan Baldwin Turner, a classical literature professor at Illinois College, was concerned that colleges and universities were not addressing the needs of children from working class families. In response, Turner believed that the federal government should pay for the establishment of agricultural and industrial colleges. He influenced the Illinois legislature to write a resolution to Congress requesting the development of land-grant institutions (Cross, 1999).

In 1857, a Vermont representative, Justin Smith Morrill introduced a land-grant bill to Congress. The bill allowed for states to receive federal grants to establish training institutions for agriculture and industry. Opposition from southern representatives delayed voting on the bill for two years. When the bill finally made it to vote, Congress passed it but President Buchanan vetoed the bill because it violated traditional policy of the government which generally left control of education to the states (Mayberry, 1977).

In 1861, Morrill reintroduced his land-grant bill with provisions that the proposed institutions teach military tactics. In 1862, Congress passed the first Morrill Act and President Lincoln signed the bill into law. The Morrill Act of 1862 provided 30,000 acres of public land for each member of Congress to those states who remained part of the union. States would sell the land and funds would be utilized to establish at least one institution where the primary objectives were (a) instruction, (b) research, and (c) outreach in agriculture, home economics (now family and consumer sciences), and mechanical arts (now engineering) (Mayberry, 1991). One stipulation stated that any state in rebellion against the government would not qualify for grants. Many historians believe this stipulation was designed to entice the south to end the war (Smith & Wilson, 1930).

Whether the idea worked or not remains undecided. However, a few years later economic despair and military losses in the south led to the ending of the war. Soon several schools were established across the south to train citizens in agriculture, home economics, and the mechanical arts (Mayberry, 1977). In the South, under the premise of separate but equal, states were authorized to establish separate schools for African Americans (Mayberry, 1989). Table 1 lists the current 1890 land-grant universities.

The 1890 Morrill Act

After the Civil War, most southern states were not in favor of land-grant institutions for African Americans. In 1890, Congress passed the second Morrill Act and it was signed into law by President Benjamin Harrison. The 1890 law, however, contained a provision that institutions practicing racial discrimination in the use of their funds would not be eligible to receive them (Mayberry, 1991, p. 46). This tactic did not

work because southern states continued to practice separate but equal educational practices (Mayberry).

Table 1

Current 1890 Land-Grant Universities

Date Founded	Land-Grant Status	Original Name	Present Name	Location	Sponsor
1866	1870	Lincoln Institute	Lincoln University	Jefferson City, MO	Civil War Negro Infantry Men
1871	1871	Alcorn Agricultural and Mechanical College	Alcorn State University	Alcorn State, MS	State Legislature
1872	1892	South Carolina Agricultural College and Mechanical Institute	South Carolina State University	Orangeburg, SC	State Legislature
1873	1890	Branch Normal College	University of Arkansas, Pine Bluff	Pine Bluff, AR	State Legislature
1875	1891	Huntsville Normal School	Alabama A & M University	Normal, AL	Group of Ex-Slaves
1876	1891	Agricultural and Mechanical College	Prairie View A & M University	Prairie View, TX	State Legislature
1880	1890	Industrial and Agricultural Normal School	Southern University	Baton Rouge, LA	State Legislature
1881	1972	Tuskegee State Normal School for the Training of Negro Teachers	Tuskegee University	Tuskegee, AL	State Legislature
1882	1920	Virginia Normal and Collegiate Institute	Virginia State University	Petersburg, VA	State Legislature

Date Founded	Land-Grant Status	Original Name	Present Name	Location	Sponsor
1886	1890	State Normal School for Colored Persons	Kentucky State University	Frankfort, KY	State Legislature
1886	1890	Princess Anne College	University of Maryland, Eastern Shore	Princess Anne, MD	Methodist Episcopal Church
1887	1890	State Normal College for Colored Students	Florida A & M University	Tallahassee, FL	State Legislature
1891	1891	State College for Colored Students	Delaware State University	Dover, DE	State Legislature
1891	1891	A & M College for the Colored Race	North Carolina A & T State University	Greensboro, NC	Citizens Group
1891	1891	West Virginia Colored Institute	West Virginia State University	Institute, WV	State Legislature
1895	1949	Fort Valley High and Industrial School	Fort Valley State University	Fort Valley, GA	Citizens Group
1897	1897	The Colored Agricultural and Normal University	Langston University	Langston, OK	Territorial Legislature
1912	1912	The Agricultural and Industrial State Normal School for Negroes	Tennessee State University	Nashville, TN	State Legislature

Note. Adapted from *A century of agriculture in the 1890 land-grant institutions and Tuskegee University 1890-1990*, by B. D. Mayberry, 1991, New York: Vantage Press and *Agriculture in the Black Land-grant System*, by J. Schor, 1982, Tallahassee, FL: Florida A & M University.

The 1890 Morrill Act appropriated funds from the sale of public lands, beginning with \$15,000 in 1890 (Cross, 1999). Southern states were given four options to meet the requirements of the law: (a) establish new African American land-grant institutions under

state control; (b) designate an existing private college for African Americans as the land-grant institution; (c) name an existing state-supported African American institution as recipient of land-grant funds; or (d) take over a private African American institution as a state college (Mayberry, 1991).

Mississippi, South Carolina, and Virginia each designated a private college as the 1890 land-grant institution. In 1920, Hampton Institute gave up its land-grant status to Virginia Normal and Collegiate Institute (now Virginia State University). The following states designated existing state supported colleges as the 1890 land-grant institution: Alabama, Arkansas, Florida, Louisiana, and Missouri. Maryland and Tennessee assigned funds to private schools and later the state gained control of the institutions. Delaware, Georgia, North Carolina, Oklahoma, Texas, and West Virginia established new 1890 land-grant institutions. A & M College for the Colored Race (now North Carolina A & T State University) was part of Shaw University in Raleigh before relocating to Greensboro in 1894. A & M College for the Colored Race became the 1890 land-grant institution for North Carolina. The mission of the 1890 land-grant institutions was identical to their 1862 counterparts (instruction in agriculture, agricultural research, and agricultural outreach), but they had limited-resources to conduct these functions (Mayberry, 1991).

Smith-Lever Act

The 1914 Smith-Lever Act provided federal funds for Extension work and created a formal relationship between the 1862 and 1890 land-grant systems. Senate amendments to the act called for equitable division of funds between the 1862 and 1890 systems. The 1862 land-grant institutions were given control of the funds and the 1890 institutions

were directed to cooperate and provide Extension services to the African American population (Scott, 1970).

Funding

The Cooperative Extension program at 1890 land-grant institutions struggled to provide Extension-related services to farmers because of funding disparities between the 1862 and 1890 Extension programs. Southern states were not required to match the federal funds provided to the 1890 land-grant institutions. This strategy had a negative impact on the education of African American farmers due to having less instructional resources (Humphries, 1991).

In 1935, the Presidents of Negro Land-Grant Colleges complained to the Secretary of Agriculture, Henry A. Wallace, regarding funding for 1890 Extension programs. The 1890 land-grant institutions were receiving \$2,800,000 less than they were entitled to; however, the funding issue was not resolved (Humphries, 1991).

According to Payne (1970), in the 1960s, the 16 1890 land-grant institutions received \$70 million compared to \$650 million provided to the southern 1862 institutions. The aforementioned dollar amounts were divided between the institutions. There were only sixteen 1890 land-grant institutions. West Virginia State University lost its land-grant status in 1957 but regained that status in 2001, and Tuskegee was not recognized as a land-grant institution until 1972 (Humphries, 1991).

In 1967, formula funds from the Morris-Nelson, Smith-Lever, and Bankhead-Jones Acts were provided by the federal government for educational expenses at both types of institutions but the 1890s continued to receive significantly less than their 1862

counterparts. The 1890 institutions received \$1.4 million compared to \$59.3 million given to the 1862 institutions in the southern states (Humphries, 1991).

In 1977, the Food and Agricultural Act (Public Law 95-113, section 1444) provided 4% of the Smith-Lever Extension funds to the 1890 institutions. This act was amended in 1981 and Congress authorized \$50 million over five years to upgrade agricultural research facilities and equipment (Humphries, 1991). Even though federal funds were provided, federal regulations did not require states to match funds (Christy & Williamson, 1992).

Contributions of the 1890 Extension Program

The 1890 Extension program assisted the 1862 institutions in providing nonformal education to African American farmers, homemakers, and youth. Additionally, the 1890s provided training and offices for African American specialists and agents. Both types of institutions provided educational programs in: (a) agriculture, (b) home economics, (c) youth development, and (d) rural development. Brown (1987) defined rural development as the process aimed at improving the quality of life in rural communities including agricultural, industrial, trade and service, and human capital development.

African American Extension work can be traced back to Booker T. Washington's arrival at Tuskegee State Normal School for the Training of Negro Teachers (now Tuskegee University) in 1881. Tuskegee was instrumental in the development of nonformal education for farmers through clubs, short courses, farm visits, and farmers' conferences (for a more detailed discussion, see Chapter 2). Also, many African

American agents and specialists received subject matter training at Tuskegee. (Brown, 1987).

The 1890 Extension agents and specialists taught improved farming practices, developed better balanced diets for adults and youth, developed child care programs, developed disease prevention programs, organized clubs, and trained volunteer leaders to assist with agricultural, home economics, and youth programs. To meet the needs of farmers, families, and the community, partnerships were formed with African American: (a) chambers of commerce, (b) school administrators and teachers, (c) health professionals, and (d) churches. Many agricultural agents collaborated with vocational agriculture teachers to educate farmers on agricultural production management (Brown, 1987).

Problem Statement

Limited funding from federal and state governments has negatively impacted the 1890 Cooperative Extension programs ability to provide nonformal education to limited-resource farmers, attract faculty, and develop cutting-edge agricultural research (Mayberry, 1991). In spite of these limitations, 1890 land-grant universities have continued to help limited-resource farmers reach economic, environmental, and social outcomes through Extension education. However, this work in recent years has not been well documented. To increase federal and state funding, program visibility, and farmer participation, 1890 Extension programs must document and publicize programs that have helped farmers reach economic, environmental, and social outcomes. Also, the 1890 Extension programs have fewer faculty and staff than their 1862 counterparts.

The NC A & T Extension program has 114 faculty members compared to 1,353 Extension faculty members at North Carolina State University (Dr. Celvia Stovall, Associate Extension Administrator, NC A & T Extension program, phone interview May 10, 2010).

Purpose and Research Questions

This research study examined how the North Carolina A & T State University Extension program has helped limited-resource farmers enhance economic, environmental, and social outcomes through its 1890 Extension education program. There has been little research on the contributions of 1890 Extension programs for this audience. This inquiry described educational collaborative efforts among North Carolina A & T Extension program and North Carolina State University, other 1862 land-grant universities, community-based organizations, and government agencies providing nonformal education and services to limited-resource farmers. To accomplish this, the following research questions were explored about the North Carolina A & T Extension program:

1. How has the North Carolina A & T Extension program helped limited-resource farmers reach program outcomes?
2. What factors affect the North Carolina A & T Extension program's ability to help limited-resource farmers reach program outcomes?
3. How does the North Carolina A & T Extension program involve limited-resource farmers in determining their educational needs and related program outcomes?
4. How does the North Carolina A & T Extension program collaborate with 1862 Cooperative Extension, community-based organizations, and other agricultural agencies to help limited-resource farmers reach program outcomes?

Significance of the Study

Ninety-five years have passed since the passage of the Smith-Lever Act, which provided federal funds for the Cooperative Extension Service creating a formal relationship between the 1862 and 1890 Cooperative Extension programs. Mayberry (1991) reported the contributions of the 1890 land-grant universities to the education of limited-resource farmers from 1890 to 1990. There is little research on recent contributions of 1890 Extension programs for this audience. This study focuses specifically on how the North Carolina A & T State University Cooperative Extension Program has helped limited-resource farmers reach program outcomes through agricultural Extension education. Furthermore, this study differs from prior research studies by exploring collaborative efforts among North Carolina A & T Cooperative Extension Program and 1862 land-grant universities, community-based organizations, and government agencies to serve limited-resource farmers from perspectives of North Carolina A & T faculty and limited-resource farmers.

Introduction to Theoretical Framework

The outcome-based evaluation model will serve as a theoretical framework for this research study. The Cooperative Extension Service receives federal and state funds to provide educational programs to adults and youth; to continue to receive funds, Extension must demonstrate program accountability through outcome-based evaluation. According to Weiss (1998, p. 32), "outcome-based evaluations place emphasis on what happens to clients after their participation in the program as a result of the intervention." This type of evaluation focuses on results. The main question addressed through this type of evaluation is (Reisman & Clegg, 1994): What has changed in the lives of individuals,

families, organizations, or the community as a result of the program? Also, outcome-based evaluation focuses on these key questions (Reisman & Clegg, 1999):

1. How has a program made a difference?
2. How are the lives of program participants better as a result of the program?

Outcome-based evaluations are helpful when organizations need to: (a) provide accountability, (b) improve program quality, (c) allocate resources, and (d) market successful programs (Poole, Davis, Reisman, & Nelson, 2003). A more detailed discussion will follow in Chapter Two.

Limitations and Delimitations

The limitations of this research study include (a) the use of interviews allows the researcher to enter the participants' world, but some participants may not be comfortable with the interview process; and (b) the results of this study have limited transferability to other populations in North Carolina or similar populations in other states.

The delimitation of this research study is the researcher's decision to interview North Carolina A & T Cooperative Extension faculty and limited-resource farmers participating in programs sponsored by that organization.

Definition of Terms

1862 land-grant universities: predominately white institutions established by the 1862 Justin Morrill Act, to provide (a) instruction, (b) research, and (c) Extension in agriculture, home economics, and mechanical arts (Mayberry, 1989).

1890 land-grant universities: predominately African American institutions established by the 1890 Justin Morrill Act, to provide (a) instruction, (b) research, and (c) Extension in agriculture, home economics, and mechanical arts (Mayberry, 1989).

Community-based organization: community-action agency providing opportunities for adults to engage in lifelong learning (Galbraith, 1990).

Extension: taking the university to the people by conducting research-based educational programs for all groups making up our nation (Rasmussen, 1989).

Formal education: compulsory attendance, disciplinary techniques and policies, and a defined curriculum. The teacher assumes control for determining needs, developing objectives, and selecting the delivery methods and techniques to be used (Seevers, Graham, & Conklin, 2007, p. 130).

Formula funding: Bankhead-Jones, Morris-Nelson, and Smith-Lever federal funds distributed to the states by law for certain education expenses (Seevers, Graham, & Conklin, 2007, p. 48).

Limited-resource farmer: operator with gross sales less than \$105,000 in 2004. Operators of limited-resource farms must also receive low household income in 2004. Household income is considered low in a given year if it is less than the poverty level for a family of four or less than half the county median household income (Economic Research Service, 2007).

Nonformal education: organized out-of-school educational programs designed to provide specific learning experiences for specific target populations (Seevers, Graham, & Conklin, 2007).

Summary

The 1862 Morrill Act created land-grant institutions with the primary objectives of teaching, research, and outreach work in agriculture, home economics, and mechanical arts. Racial discrimination prevented African Americans from attending 1862 land-grant institutions in the South. In response, Kentucky, Mississippi, South Carolina, and Virginia used land-grant funds to create institutions for African Americans. Later, the 1890 Morrill Act provided funds for the 1862 institutions to establish land-grant institutions for African Americans with the same mission as their 1862 counterparts.

The Smith-Lever Act provided federal funds for Cooperative Extension and created a partnership between 1862 and 1890 Extension programs. All federal funds were allocated to the 1862 Extension program and the 1890 institutions were instructed to cooperate and provide nonformal education to African Americans. This funding

arrangement remained effective until 1977 when legislation provided federal funds directly to 1890 land-grant institutions.

Despite unequal funding and racial discrimination, the 1890 Cooperative Extension programs provided effective non-formal education to limited-resource audiences in agriculture and natural resources, family and consumer sciences, youth development, and community development. This study explores this achievement from 1990 to 2008 at North Carolina A & T State University by examining the educational programs for limited-resource farmers using an outcome-based evaluation model.

Dissertation Overview

Chapter 2 includes a review of the literature related to educating African Americans after the Civil War, historical background, the role of the 1890 Cooperative Extension program in educating limited-resource farmers, adult education theory, program planning theories, outcome-based evaluation model, and programming needs of limited-resource farmers. Chapter 3 describes the research methodology used in this inquiry, including case selection, data collection, and data analysis. Chapter 4 contains the findings from the research and discussion related to North Carolina A & T Cooperative Extension programs' contributions and collaborations for limited-resource farmers' education. Chapter 5 includes the conclusions, recommendations, and implications for future research.

Chapter 2

Literature Review

Chapter Two introduces the reader to relevant research related to educating African Americans following the Civil War, historical background, the role of the 1890 Cooperative Extension Program in educating limited-resource farmers, adult education theory, adult education program planning theories, outcome-based evaluation model, and educational needs of limited-resource farmers.

Educating African Americans Following the Civil War

The Civil War (1861 to 1865) was an important factor leading to the establishment, growth, and development of land-grant institutions for African Americans. From 1619 to 1863, African Americans were victims of the dehumanizing experience of slavery, with several southern states having laws that educating African Americans was a crime. The end of the Civil War was a new era in America. Approximately four million slaves were freed from the bondage of slavery and began searching for a social, economic, and political presence (Mayberry, 1989).

Education was needed to provide the basis for social, economic, and political power for the freed slaves. Even though educating African Americans was not a priority for the southern states, the following causal agents contributed to the establishment of African American educational institutions: (a) African American leaders, (b) benevolent and philanthropic individuals and organizations outside the South, and (c) state legislatures (Mayberry, 1989). In 1866, Lincoln Institute (now Lincoln University) in Jefferson City, Missouri, was organized by "Missouri Volunteers." The "Missouri Volunteers" were soldiers and officers of the 62nd Colored Infantry. Officers and enlisted

soldiers raised \$5,000 to establish Lincoln University. The soldiers provided three purposes for the new institution: (a) benefit freed African Americans, (b) locate in Missouri, and (c) combine study with labor (Schor, 1982).

Hampton Institute Established

In 1867, General Samuel Chapman Armstrong, an agent of the Freedmen's Bureau in Virginia, wrote a letter to the American Missionary Association recommending that 159 acres of land on the Hampton River be purchased for the establishment of an African American school in Virginia. He believed the trade and teacher education school would improve living conditions and create employment opportunities for African Americans. Armstrong developed the following purposes for Hampton: (a) promote independence and (b) teach students how to earn a living with their hands and brain (Schor, 1982).

Hampton opened for students in April 1868 as a trade and teacher education school for African Americans. Hampton became the model for Tuskegee Institute and other 1890 land-grant institutions. Thirty students enrolled in the inaugural class with males performing farm chores and females assigned to house work. All of the students worked to cover boarding expenses. Produce was sold in the local area and Washington DC with proceeds used to build academic buildings and dormitories. Armstrong was interested in scientific farming and hired Albert Howe, a former Freedmen's Bureau member, as farm manager. Their vision for the farm was profitability and creating a model farm for southern states (Schor, 1982).

Booker T. Washington Studies at Hampton Institute

Armstrong's influence on agriculture became a reality with the arrival of Booker T. Washington in 1872. Washington was born on a plantation in Franklin County, Virginia, and relocated to Malden, West Virginia, after the Civil War. He was aware of Hampton Institute and was eager to receive an education to uplift him and oppressed people. His journey from Malden to Hampton was hampered by racial discrimination, fatigue, and hunger; however, the barriers did not force him to quit. He arrived in Richmond, Virginia, with no money for food and slept under a wooden sidewalk before continuing his journey to Hampton. Washington worked as a janitor at Hampton to cover his boarding expenses and later he taught classes. In 1875, Washington graduated from Hampton and returned to Malden as a teacher. He then returned to Hampton as a faculty member until 1881 (Washington, 1963).

Historical Background

Booker T. Washington Builds Tuskegee Institute

In 1881, George Washington Campbell, an Alabama merchant, contacted Armstrong while searching for a qualified individual to lead an African American school in Alabama. Armstrong recommended Washington for the position and he became the first leader of Tuskegee Industrial Institute (Schor, 1982). The birth of African American Extension work started with Washington's arrival at Tuskegee. He found the following limited resources upon his arrival: one leaky church building, no students, no desks, no books, and one instructor. However, these limitations did not deter Washington. Within two days he was visiting Alabama's residents to determine their needs and to inform

them he was there to help them overcome racial discrimination and poverty (Mayberry, 1989).

To build a successful institution and outreach program, Washington sought financial assistance from whites in the north and south who supported African American education. As a result, many whites supported Washington's efforts and provided financial support to Tuskegee. Within four years, Washington and Richard Potts, a former student at Tuskegee, formed a Farmers Club in Notasulga, Alabama, to improve conditions for colored farmers. Farmers were encouraged to own homes, improve farming practices, organize groups, and educate their families (Mayberry, 1989).

Washington was a firm believer in educational outreach activities. He hired Charles W. Greene in 1888 as a farm manager. Green helped organize farmers clubs and classes, but Washington was not completely satisfied. Not all people who needed assistance were being reached. The Extension Department was established to take the institution to the farmers. Washington and his teachers visited farmers at their farms, homes, and churches to provide agricultural assistance and to educate their children. Monthly meetings were held with farmers and other workers to discuss problems and crops that could be produced on small acreage (Mayberry, 1989).

In 1892, the monthly farmers' meetings evolved into the first annual African American Farmers' Conference at Tuskegee with approximately 500 people attending. Washington presided and encouraged people to present problems and to offer solutions. The conference became an annual event attended by farmers and rural leaders from the south (Mayberry, 1989). By 1898, the attendance of the Farmers' Conference exceeded 2,000 and the conference was two days in length. The first day was devoted to farmers

and the second day was a Professional WorkersøConference for teachers from African American institutions (Schor, 1982). This conference was the forerunner of Extension farm conferences at other institutions for whites and African Americans (Mayberry, 1989).

George Washington Carver Expands Tuskegee Outreach and Extension Program

Tuskegee continued to prosper with the development of a course of study in agriculture by 1893 which initiated formation of the Tuskegee Department of Agriculture in 1896. Washington believed Tuskegee was the ideal institution to train African Americans in agriculture because of the successful FarmersøConference and outreach activities. Also, he had a firm conviction that scientific agriculture would play a major role in the future. Qualified instructors were in place to teach scientific agriculture; however, Washington was searching for a committed scientist to lead the Department of Agriculture. Washington persuaded George Washington Carver to leave Iowa State Agricultural College (now Iowa State University) to lead the Department of Agriculture (Mayberry, 1989).

Carver was the first African American student and faculty member at Iowa State University. Carverø knowledge of crop rotation and soil conservation helped Tuskegee become a major player in agriculture. Carver was known for developing over 300 products from the peanut and over 100 products from the sweet potato. Besides research, Carver educated African American and white farmers through conferences, traveling exhibits, demonstrations, lectures, and pamphlets (Schor, 1982).

Extension Programs at Tuskegee

In 1887, Carver, Green, and John H. Palmer, an instructor, organized the Agricultural FarmersøInstitute at Tuskegee to provide free lectures and demonstrations of agricultural practices. Monthly meetings were held to address such topics as sweet potatoes, farm management, deep plowing, and care of chickens. The Agricultural FarmersøInstitute spread to other 1890 land-grant institutions in Florida, Georgia, Louisiana, Mississippi, North Carolina, and Texas (Schor, 1982).

Tuskegee sponsored the Macon County Fair in the fall of 1898 to provide farmers an opportunity to show their products and accomplishments. Hundreds of people attended this first fair, and by 1915 thousands of African Americans and whites were attending (Schor, 1982).

In 1903, Carver was invited by Alabama legislators to exhibit his products and research in Montgomery, Alabama. Carverø's visit encouraged the legislators to establish Negro Day in 1906 for farmers to exhibit their agricultural products. Negro Day became the annual Alabama State Fair, and this practice spread to other southern states (Jones, 1975).

Short courses became a component of the Tuskegee outreach program in 1906. The short courses provided farmers with six weeks of study and observation at the school farm and experiment station. Carver, George Bridgeforth, and guest lecturers instructed farmers in general farming, livestock, dairy, poultry, fruits, and truck farming. In addition to agriculture, courses were offered for the entire family. Certificates of completion were awarded to participants and prizes of \$1 to \$5 were awarded for progress. By 1912, over 1,500 operators of small and large farms attended the short courses (Jones, 1975).

The Moveable School

Even though both Washington and Carver believed in outreach to farmers, the Farmers' Conferences and Institutes were not reaching all farmers who needed assistance. To address this need, Carver and his students designed a strong wagon body with moveable sides, to be transported by one or two horses to take Tuskegee to Alabama farmers. Washington received \$567 from Morris K. Jesup, a New York banker, to cover building the wagon and purchasing equipment. The John F. Slater Fund financially supported operation of the wagon. On May 24, 1906, the Jesup Wagon was put to work with Bridgeforth as the first operator. The Jesup Wagon was equipped with plows, planters, a cultivator, a cotton chopper, a variety of seeds, samples of fertilizer, a churn, a butter mold, a cream separator, a milk tester, and other appliances. Bridgeforth made community rounds and set up at a central location to demonstrate agricultural practices. The Jesup Wagon was better known as the "Moveable School" for the 48 years of its service (Mayberry, 1991).

The Birth of the 1890 Extension Program

Seaman A. Knapp, Special Agent with the United States Department of Agriculture (USDA), visited Tuskegee to discuss with Carver and Washington a cooperative program for African American farmers in the south. Washington approved of the program because federal funds would help support the existing Extension activities. Knapp was reluctant about hiring black agents but supported a "separate but equal" relationship. On November 12, 1906, Thomas M. Campbell was hired as the first African American agent at Tuskegee Institute in Alabama. One month later, John B. Pierce was offered a similar position at Hampton Institute in Virginia. The hiring of Campbell and

Pierce marked the birth of the USDA's African American outreach work (Mayberry, 1989).

Campbell served as a district agent for Alabama, Mississippi, and the lower south and Pierce's duties were similar in Virginia and the upper south. In addition to teaching agricultural practices, Campbell attended meetings, short courses, and agricultural institutes. He also recruited farmers for demonstration work, recommended African American men and women for demonstration agent positions, and served as a liaison to Washington and the USDA. Campbell suggested placing demonstration agents in counties with an African American population exceeding 25%, but the suggestion was ignored by the USDA (Crosby, 1986).

African American Extension Agents

Early farm demonstration agents were eager to serve African American farmers, but they encountered financial and work environment barriers. Agents earned between \$50 and \$80 per month, worked six days a week, used personal funds for travel, and their term of employment ranged from four to twelve months. Some farmers did not trust demonstration agents because of bad experiences with seed salesmen. They believed the agents were spies employed by the federal government or employees of local merchants. Many preachers encouraged farmers not to participate in demonstration work because the agents could not save their souls. Some agents were physically harmed because they were seen as federal government employees. The high illiteracy rate of African American farmers also hindered the agents' capacity to deliver nonformal education to farmers (Crosby, 1986).

African American farmers who did participate in demonstration work improved production practices and increased farm income compared to non-participants. As a result, other farmers were more likely to participate in farm demonstration work. In turn, many farmers contributed cash to support continuance and expansion of demonstration work. This monetary support provided agents with an automobile or motorcycle to continue demonstration work (Crosby, 1986).

The Smith-Lever Act Formalizes Cooperative Extension Nationwide

Senators Hoke Smith of Georgia and A. F. Lever of South Carolina sponsored the 1914 Smith-Lever Act which provided a financial base for demonstration work and established Cooperative Extension. Additionally, administrative activities for Extension were assigned to the 1862 land-grant institutions. Previous funds that supported African American agents' demonstration work were eliminated after the passage of the Smith-Lever Act (Crosby, 1986).

Following the passage of the Smith-Lever Act, representatives of the National Association for the Advancement of Colored People (NAACP) met with legislators to discuss funding for African American agent demonstration work. Senators Wesley Jones of Washington and Albert Cummings of Iowa tried unsuccessfully to seek authorization of funds through the Jones Amendment for African American agent demonstration work. Legislators who opposed the Jones Amendment believed white agents should supervise and conduct demonstration work for all farmers and questioned the credibility of 1890 African American land-grant institutions to lead demonstration work. Furthermore, southern legislators threatened to reject Extension programs if funds were divided with the 1890 institutions. As a result, the Jones Amendment failed and state Extension

administrators requested 1890 institutions to cooperate with 1862 institutions and conduct demonstration work for African American farmers (Crosby, 1986).

Washington was not pleased with the Smith-Lever Act; however, he worked with Auburn University, the 1862 institution for Alabama, to secure funding for the Tuskegee Extension program. The remaining 1890 Extension programs struggled to provide demonstration work. Also, African American Extension agents Campbell and Pierce were not permitted to work outside of Alabama and Virginia (Crosby, 1986).

African American Extension Work in Wartime

In 1917, the United States entered World War I, and President Woodrow Wilson encouraged agents to increase food production through demonstration work. Many African American farmers rejected this work due to government distrust and rumors of food being confiscated for soldiers. Auburn and Tuskegee formed the "Uncle Sam's Saturday Service League" to increase food production in Alabama under Campbell's leadership. Meanwhile, African American farmers were asked to work six days instead of five days each week, merchants were encouraged to support farmers' efforts, and African American preachers were asked to support farmers' wartime efforts by reducing conventions and camp meetings (Campbell, 1918).

African American agents' dedication to demonstration work and war-time efforts persuaded the federal government and Extension administrators to restore African American regional supervisors. In December, 1918 Campbell (Tuskegee), Pierce (Hampton), and E. L. Blackshear (Prairie View Institute, now Prairie View A & M University in Texas) were restored as regional supervisors for African American agents (Crosby, 1986).

World War II catalyzed the Extension Service to increase crop production by organizing war labor and machinery committees. Also, farmers were introduced to the labor intensive tenancy system based on Mexican wage laborers and tractors. Arlingea A. Hicks, a farm demonstration agent, organized a truck-pooling arrangement for African American farmers residing less than 100 miles from Mobile, Alabama. Rubber and gasoline were rationed and farmers marketed poultry, eggs, livestock, and sweet potatoes by truck-pooling (Whayne, 1998).

In 1943, F. D. Patterson, Tuskegee University President, requested \$1,547,600 from the Alabama legislature to improve conditions for African American farmers and increase the population of farm and home demonstration agents. He also increased the salary of Tuskegee agents, increased travel funding, and provided clerical assistance. As late as 1950, white agents earned twice as much as African American agents in 13 of 14 southern states (Whayne, 1998).

African American Extension Work in the 1950s

Following World War II, many whites believed African Americans should be placed in previous roles despite their participation in the war and Extension efforts to increase food production. For African Americans to be considered for a farm demonstration agent, farmers had to submit a request to the local Board of Commissioners for approval. If African American agents confronted the Extension Service regarding equity issues, they were reprimanded or terminated for insubordination (Whayne, 1998).

In the early 1950s, limited employment opportunities existed for African Americans trained in agriculture except farm demonstration agents and vocational

agriculture teachers. In Alabama, lower wages and increased cost of living were barriers for African Americans considering employment, and this resulted in African American agents leaving Extension. Low salaries impacted program efforts in Alabama because agents could not afford to repair or to purchase automobiles. In addition, supervisors confronted agents because of creditors' complaints. Many agents were terminated because of their inability to pay their debts (Whayne, 1998).

The majority of African American farmers were tenants or sharecroppers and the agents had to receive permission from the white owners to discuss crop diversification programs. Also, the educational program could not contradict the owners' program. Regardless of the arrangement, agents promoted diversification by promoting livestock and truck farming for farmers near urban centers. Many farmers resented African American farm demonstration agents because of their perceived arrogance and limited farming experience. As a result, agents established trusting relationships with key individuals in the black community such as preachers, school officials, and local leaders. Most agents offered a program with a speaker and a demonstration of an improved agricultural practice. Preceding the program, the agents met individually with farmers to discuss the agricultural practice and organize farmers. The agents conducted follow-up visits at three, six, and twelve month intervals and then reorganized their work and instructional methods. Agents also met the County Councils (now advisory committees) to devise a county plan of work to address local agricultural needs (Whayne, 1998).

The number of African American agents peaked in the 1950s. African American agents were responsible for twice the number of counties as white agents and worked for one-half to two-thirds the salary of their white counterparts. The title "farm agent" was

used to distinguish African American agriculture agents from white "county" or "assistant agents." In 1954, the Supreme Court declared "separate but equal" practices were unconstitutional (Brown vs. Board of Education) and southern states were forced to develop a plan for elimination of discrimination in the Extension System (Whayne, 1998).

The community and resource development (CRD) program was initiated in the 1950s and many newly appointed African American agents were assigned to CRD programs. Agents served as facilitators and advisors to groups who were interested in community viability. Community and resource development programs became increasingly popular and white agents assumed the leadership role (Schor, 1986).

During the 1950s, African American farm demonstration agents focused their attention on rural housing. Agents believed that building and maintaining homes would reduce the migration of farm families to the north. Agents instructed farmers and competent laborers on reading and interpreting blueprints and constructing and repairing homes. Home construction information was disseminated through letters, group meetings, suppliers, and carpenters. The program had limited success because many African Americans did not own their homes (Schor, 1986).

1890 Extension from the 1960s to 1980s

The Brown versus Board of Education Supreme Court decision and the Civil Rights Act of 1964 forced Cooperative Extension to deal with discriminatory practices. Alabama responded by relocating African American staff from Tuskegee to Auburn University from 1965 to 1972. Other states responded with complete integration or absolute elimination of the 1890 Extension program (Mayberry, 1991).

From 1965 to 1972, there was limited state or federal funding for Extension at 1890 institutions (Mayberry, 1991). From 1970 to 1971, agencies, organizations, and individuals partnered to fight for funding to reinstate Extension programs at the 1890 universities and Tuskegee. In 1971, Congressmen Frank E. Evans and Edwin L. Kirby helped reestablish 1890 Extension programs with federal funds. On October 4, 1971, Extension programs were reestablished at the 1890 universities and Tuskegee. Although these programs were reestablished, Congress gave control of funding to the 1862 universities. Additionally, the legislation mandated one fully coordinated Extension program in each state and the universities had to develop a memorandum of understanding and a plan to strengthen 1890 Extension work (Mayberry, 1991).

In 1977, the Food and Agricultural Act (Public Law 95-113), created an Extension administrator and research director position at the 1890 universities. Also, President Jimmy Carter appointed W. Neil Schaller as Federal Extension Director to redistribute power from the 1862 Extension Service to the 1890 Extension Program. Schaller had limited success because some 1862 administrators were unwilling to work with 1890 administrators (Schor, 1986).

The Food and Agricultural Act (Section 1444) dedicated 4% of the Smith-Lever Extension Funds to the 1890 universities including Tuskegee effective September 30, 1979. The amount increased to 5.5% on September 30, 1982, and 6% on September 30, 1985. This legislation was significant because the funds were provided directly to the 1890 universities. In 1983, the U.S. Congress authorized \$50 million to support Extension facility development at 1890 universities (Mayberry, 1991).

Contemporary 1890 Extension programs continue their commitment to limited-resource audiences. Extension specialists and agents provide technical assistance and small farm programs for limited-resource farmers despite funding disparities between the 1862 and 1890 Extension programs.

The Role of the 1890 Cooperative Extension Program in Educating Limited-Resource Farmers

The role of the 1890 Cooperative Extension Program is to educate limited-resource farmers, families, and youth. Extension professionals meet the needs of limited-resource clientele by (a) conducting needs assessments, (b) collaborating with the 1862 Extension Service and agencies serving farmers, (c) being visible in the community, (d) providing research-based information to clientele, (e) providing leadership for small farm programs, and (f) developing and maintaining credibility with limited-resource clientele (Hughes, 1990).

Small Farm Programs

In most southern states, the 1890 Extension Program provides leadership for the small farm program. The small farm program improves the economic viability of limited-resource farmers through educational programs. Each 1890 small farm program is unique to its own location but provides educational programs and assistance in (a) small animal production (e.g., rabbits, goats, and sheep), (b) pastured swine and poultry production, (c) direct marketing, (d) agribusiness management, (e) horticulture, (f) aquaculture, (g) agricultural and food biosecurity, and (h) alternative agricultural enterprises (Williams & Kolison, 2006).

These are a few examples of how the 1890 Extension program helps limited-resource farmers. Approximately 30 limited-resource swine farmers in eight North

Carolina counties increased their combined gross income by over half a million dollars. The farmers participated in a cost management and active marketing program sponsored by the North Carolina A & T Cooperative Extension program. In addition, a local restaurant signed an agreement with the university to purchase locally-raised pork (Williams & Kolison, 2006).

Following the 2004 tobacco buyout, limited-resource farmers were looking for alternative enterprises to replace or supplement tobacco income. Forty-two North Carolina tobacco farmers participated in a pastured-raised and antibiotic-free pork program sponsored by the North Carolina A & T Cooperative Extension Program. Each farmer participating in the program generated between \$14,000 and \$21,000 in net profit (Williams & Kolison, 2006).

The Cooperative Extension Program at Alcorn State University and South Carolina State University helped limited-resource farmers open farmers markets to sell their products. Six Mississippi farmers each increased their farm income by an average of \$4,300 and 23 South Carolina farmers together earned a total of \$70,000 from sales at these markets (Williams & Kolison, 2006).

The University of Arkansas, Pine Bluff Cooperative Extension Program assisted 100 limited-resource farmers with loan applications. Forty of the farmers received loans totaling \$4.3 million. In Mississippi, 27 farmers received \$2 million in loans (Williams & Kolison, 2006).

These examples resulted in generating additional income for limited-resource farmers. The 1890 Cooperative Extension work is enhanced by the use of good adult educational practices by Extension specialists and agents.

Adult Education Theory

Limited-resource farmers are faced with barriers to success and sustainability such as low net farm income, limited capital, less acreage, and less formal education than operators of large farms. For limited-resource farmers to survive and remain competitive, they often participate in educational programs sponsored by the Cooperative Extension and other agricultural agencies (e.g., Farm Service Agency, Natural Resource Conservation Service, and Risk Management Agency). Many limited-resource farmers participate in educational programs if the programs are relevant and directly address their needs (Tubene & Holder, 2001). Therefore, adult educators including Extension professionals need to understand that adults learn differently from youth and plan programs that address the diverse needs of adult learners, including farmers. Adult education occurs in diverse settings, involves heterogeneous groups of people, the instructor is often called a facilitator, and the curriculum is flexible. Also, adult education can be labeled as staff development, manpower development, developmental education, continuing education, and lifelong education (Knowles, 1980).

Prior to 1950, many adults were taught using a pedagogical model used in elementary and secondary education. The pedagogical model was an instructor-centered approach with teachers as the providers of education and the students as the receivers of information (Knowles, 1980).

Some adult educators realized that adults learn differently from children and that the pedagogical model was not a good fit for adult learning. These pioneer adult educators implemented a student-centered approach utilizing problem solving, hands-on learning, and self directed inquiry to instruct adult learners. They used practical strategies

such as interviewing and projects instead of written tests and quizzes. The student-centered approach was effective, but there was no scientific research to support the practice (Knowles, 1980).

During the 1950s, several adult educators published books related to the new educational practices that were being used to instruct adult learners. Although books were published, there was no theory to support the practice. The adult education field prospered with help from anthropology, gerontology, psychology, and sociology. Through collaborative efforts, research-based information was developed to support the new adult educators and their practices. This new research-based knowledge became known as andragogy. Knowles (1980) defined andragogy as the art and science of helping adults learn. The andragogical model is based on six assumptions: (a) the need to know, (b) the learners' self-concept, (c) the role of the learners' experiences, (d) readiness to learn, (e) orientation to learning, and (f) motivation (Knowles, Holton, & Swanson, 2005)

The Need to Know

Adults are reluctant to participate in educational experiences unless they understand the benefits. If adult learners are interested in the education program, they will contribute time and effort to reap the benefits (Tough, 1979). Also, adults are often willing to be self-directed learners. With that focus, adult educators become facilitators of learning and guide learners to find new knowledge. Adult educators also implement instructional methods to allow the learners to explore and bridge the gap between their present and future situation (Knowles, 1990).

The Learners' Self-Concept

Adults are more receptive to learning if they are allowed to make their own decisions. Some adults will resist or avoid learning experiences when the educational provider favors a teacher-centered approach over a learner-centered approach. Adult educators with a student-centered approach allow adult learners to help develop the course syllabus, select instructional methods and materials, and select evaluation methods. Conversely, some adult learners rely on the educator to make all learning decisions. Adult educators must understand dependent learners and implement strategies that support self-directed learning (Knowles, 1975).

The Role of the Learners' Experience

Adults enter educational programs with a wide array of experiences. Many adults are willing to share their experiences with others if given an opportunity and enjoy learning from each other by sharing their diverse experiences. This means that adult educators should provide time for learners to share their unique experiences with each other (Knowles, Holton, & Swanson, 2005).

Readiness to Learn

Readiness to learn refers to adult learners engaging in learning experiences that help them effectively manage their real-life situations. Timing becomes important because learners need to be prepared for developmental tasks before advancing to higher level tasks. The use of performance models, counseling, and simulation exercises help improve the readiness of the learners to deal with situations (Knowles, Holton, & Swanson, 2005).

Orientation to Learning

Adult learners are often task-centered or problem-centered in their orientation to learning compared to youth who are often subject-centered. Adults are eager to learn when they recognize learning is related to problems they encounter on a daily basis. Therefore, curricula should be developed and implemented that reflect the learners' situation and skills to help them solve problems (Knowles, Holton, & Swanson, 2005).

Motivation

Both internal and external factors encourage adult learners to engage in educational programs. Intrinsic motivational factors include increasing job satisfaction, improving self-esteem, and creating a better quality of life. Extrinsic motivational factors include better employment, promotions, and higher pay. According to Tough (1979), barriers that negatively impact adult learning include a pessimistic self-concept, limited-resources, time constraints, and programs that hinder principles of good adult learning.

The andragogical model is not designed as a "one size fits all" adult education but provides flexibility in planning and implementing quality adult education programs (Knowles, 1984). According to Knowles (1989), andragogy is a conceptual framework that serves as a basis for a theory in adult learning and adult education.

Extension professionals who have an understanding of adult education theories may be more likely to select appropriate models to plan programs and implement educational activities to more fully meet the needs of limited-resource farmers.

Adult Education Program Planning Theories

Extension professionals are faced with the task of developing innovative programs that meet the needs of the clientele, most often adult clientele. To overcome the

challenge of developing innovative programs, Extension professionals should become familiar with different program models to determine which model or models will improve programs for their targeted audience (Boone, Safrit, & Jones, 2002). The Cervero and Wilson Program Planning Theory, the Conceptual Programming Model, and the Interactive Model of Programming are described.

Cervero and Wilson Program Planning Theory

Cervero and Wilson's (2006) "program planning" theory is a people-centered approach. The theory focuses on people making decisions with others in a social context about specific features of the program, issues of power and participation, and decision making across all areas of social life. In this theory, the planning table can be a physical table (e.g., meeting room and table) or metaphorical table consisting of conversation on the telephone, e-mail, faxes, hallways, and private offices (Cervero & Wilson, 1996).

Power, interests, ethical commitment, and negotiations are the four dynamics that shape this planning theory (Cervero & Wilson, 1994). Planners negotiate the power and interests of the stakeholders to determine whose interests reach the planning table and how the interests define the program. Deciding whose interests reach the planning table is an essential ethical question related to planning programs (Cervero & Wilson, 1996).

Power. Power relations define who is represented at the planning table and who makes decisions about programs. Power is defined "as a capacity to act" (Cervero & Wilson, 2006, p. 84). A coercive relationship by the program planner is common but too restrictive for successful program planning. Although asymmetrical forms of human dominations are highly visible, in some programs more successful relationships exist

when power is equally distributed to all people at the planning table (Wilson & Cervero, 2001).

Interests. Those involved in the planning process have specific personal interests (Cervero & Wilson, 1994). These interests are predispositions embracing goals, values, desires, and other inclinations that lead a person to act in one direction or another (Morgan, 1997, p. 161). The features of the programs are based on the interests of the people. In other words, people with interests plan programs (Cervero & Wilson).

Outcomes of program planning depend on which people are at the planning table, the interests they represent, and how they choose to exercise power while planning programs (Cervero & Wilson, 1994). Planning interests are often related to educational and social and political outcomes (Cervero & Wilson, 1998). Social and political outcomes consist of using one's power to influence the features and results of the program (Cervero & Wilson, 2006).

Educational outcomes involve change in the program participants' knowledge and the use of that knowledge to help themselves and their community. Some people at the planning table have hidden agendas or interests unrelated to educational outcomes. Hidden agendas should be considered in program planning because all outcomes may not be educational. By overlooking social and political in favor of only educational outcomes, planners may develop programs that are not holistically addressing the needs of the clientele (Cervero & Wilson, 2006).

Ethical Commitment. According to Forester (1989), ethical commitments are beliefs about how to act in the world. There is a causal relationship among whose interests people represent there, the practical judgments that these people make, and the

specific features of educational programs (Cervero & Wilson, 1994, p. 94). Planners should ask two basic questions related to ethical commitment (Cervero & Wilson, 2001):

1. Who should benefit in what ways from educational programs?
2. Whose interests should be represented?

Ethical commitment protects the interests of the targeted audience instead of allowing just the people with greater power to determine the features of the program (Cervero & Wilson, 2006).

Negotiation. According to Cervero and Wilson (2006, p. 94), "negotiation is the overall concept describing those social interactions, not because there is always conflict involved but rather because all human interactions are in part political." There are three categories of social interactions: (a) consultation, (b) bargaining, and (c) dispute (Newman, 1994).

Consultation involves two or more parties whose common interests outweigh their differences. All parties work together sharing information and solving problems in a mutually supportive manner (Newman, 1994). The amount of power each individual brings to the consultation is irrelevant (Cervero & Wilson, 2006).

Bargaining differs from consultation because the parties involved discuss common and conflicting interests with a purpose of reaching agreement. The capacity to act determines which party will lose and which party will win (Newman, 1994).

Dispute is the opposite of consultation, conflicting interests outweigh common interests. Each party involved is interested in winning (Newman, 1994). The amount of power that each party brings to a dispute is valuable in order to accomplish their objectives (Cervero & Wilson, 2002).

The Conceptual Programming Model

The conceptual model uses a holistic approach to programming that extends beyond needs identification, assessment, and analysis. The expressed and analyzed needs of learners are translated into a planned program, implementation of that program, and evaluation of the program's outcomes. Social and behavioral sciences provide a theoretical base for the model and helps planners understand planned changes in human systems. Also, the model emphasizes adult education organizations collaborating with the targeted audience and stakeholders in developing and implementing the program based on the learners' expressed and analyzed needs (Boone, Safrit, & Jones, 2002).

Planning, design and implementation, evaluation, and accountability are three interrelated subprocesses in the model. Sequential and processual tasks are included in each subprocess to provide clear instruction for program implementation. Processual tasks create a conceptual and process driven model instead of a mechanistic or trial-and-error model (Boone, Safrit, & Jones, 2002).

The planning subprocess involves the organization's commitment to the needs of the target public and linkage to learners and stakeholders. This process includes five processual tasks or actions: (a) scanning the environment, (b) studying and analyzing the learners and stakeholders, (c) ranking the target public to be served by the organization, (d) engaging all groups in discussion regarding needs, and (e) reaching consensus about the focus of the adult education organization's planned program (Boone, Safrit, & Jones, 2002).

The second process involves the organization design and implementation of the planned program. Four sequential processual tasks are involved in designing the program:

(a) needs hierarchy analyzing the needs from higher to lower level needs; (b) objectives hierarchy creating a learner objective for the analyzed need; (c) change strategies hierarchy selecting a learning experience for each objective; and (d) outcomes hierarchy defining intended outcomes for each learner objective. Implementing the program in this model includes two components: (a) designing an incremental and sequenced plan of action derived from the planned program, and (b) invoking the action strategies needed to implement the planned program (Boone, Safrit, & Jones, 2002).

In this model, the adult educator performs six processual tasks: (a) analyzing hierarchies of needs, objectives, change strategies, and outcomes; (b) incorporating these findings into incrementally designed plans of action; (c) developing the resources needed to implement the planned program; (d) monitoring implementation of the planned program; (e) providing reinforcements and feedback to all groups involved in program implementation; and (f) using findings from formative evaluations to make needed changes to the planned program (Boone, Safrit, & Jones, 2002).

The final subprocess of conceptual programming is evaluation and accountability. Evaluation and accountability is making informed judgments about the effectiveness of the planned program. Adult educators perform five processual tasks to evaluate the outcome of the program: (a) re-clarify the outcomes and select and use the appropriate measurement tools to assess progress in achieving these outcomes, (b) assess causal relationships with respect to input and outcomes, (c) review the implementation of learner objectives, (d) review the translation of the learner objectives within their hierarchy in relation to deficiencies, and (e) assess long-term program impacts. To demonstrate accountability, adult educators use three processual tasks: (a) report

outcomes and impacts achieved through the planned program, (b) analyze and assess the organization's functions and structure to determine if changes need to be made, and (c) recommend how the organization can better meet the needs of the target audiences (Boone, Safrit, & Jones, 2002).

The Interactive Model of Program Planning

The Interactive Model of Program Planning is similar to other existing program models because it includes tasks and components. The distinguishing feature of this program model is that it is interactive and comprehensive. People and place are acknowledged as important in the planning process, differences among cultures are considered, and practitioners find the model useful. Program planners use this model as a guide, not a blueprint for practice. Twelve components shape the model and can be used in any order or combination: (a) discerning the context; (b) building a solid base for support; (c) identifying program ideas; (d) sorting and prioritizing program ideas; (e) developing program objectives; (f) designing instructional plans; (g) devising transfer-of-learning plans; (h) formulating evaluation plans; (i) making recommendations and communicating results; (j) selecting formats, schedules, and staff needs; (k) preparing budgets and marketing plans; and (l) coordinating facilities and on-site events. Each component includes a list of tasks for the program planner (Caffarella, 2002).

Experienced program planners find that program planning rarely occurs in a linear, step-by-step process. Program planners generally work with several components simultaneously and not in a specific order. Also, program planners report that the program process is a people-centered activity involving the clientele and stakeholders in all components. The model is easily adapted to different cultures because components

can be selected to meet unique program needs. Finally, this model explains what needs to be done for successful programming and provides specific examples of how to perform each component (Caffarella, 2002). Extension professionals need to understand program planning theories so they can develop effective educational programs that meet the needs of limited-resource farmers.

Outcome-Based Evaluation Model

According to the W. K. Kellogg Foundation (1998), outcome-based evaluations are significant for effective program development. Early on in program development, outcome-based evaluations can focus on:

1. What impact is the program having on the participants, staff, community organization agency, and community?
2. What unexpected impact has the program had?

During the later phases of program development, the outcome-based evaluation can focus on (W. K. Kellogg Foundation, 1998):

1. Determining what outcomes to expect or hope for from the program.
2. Thinking through how individual participant outcomes connect to specific program or system-level outcomes.

Determining Outcomes

To determine the outcomes of programs, organizations should concentrate on the people or groups involved in the program (Patton, 2001). Program staff often provide valuable input about the changes participants have experienced. Program participants may provide the best information related to outcomes if they are given an opportunity to answer three questions (Reisman & Clegg, 1999):

1. Why do they participate in the program?
2. What do they believe will happen as a result of their participation?
3. What do they hope will change from their involvement in the program?

To gain a better understanding of possible outcomes of a program, the evaluator/researcher must involve stakeholders (e.g., funding agencies or other organizations) serving the same clientele (Reisman & Clegg, 1999).

When all stakeholders' perspectives have been explored, the evaluator/researcher should determine which outcomes to include in the program evaluation. The following questions will help with the outcome selection (Clegg & Reisman, 1998):

1. Which outcomes are most important to achieve? Which are most closely related to the core business of the program?
2. Are the outcomes meaningful? Is the change or benefit something that makes a real difference for the participants?
3. Which outcomes are useful? Which will provide the best information for decision-making or program improvement?
4. Which outcomes are most reasonable? Which outcomes can the program be expected to influence in a non-trivial way? Which can the program be fairly held accountable for?
5. Which outcomes are most realistic? Which are most likely achievable within the resources available? Which are likely achievable within the designated reporting period?

The Change Process

Outcomes must indicate the kinds of change the program will produce. For some programs, participants may experience a behavioral change. Other programs may focus on developing knowledge or skills. Table 2 shows the steps in the change process. In general, program participants must begin with the first steps before the later steps can be achieved. Conversely, the steps are not always linear and not every step is appropriate for every program (Reisman & Clegg, 1999).

Table 2

Steps in the Change Process

Outcomes	Types of Outcomes
Connections	Building trust with staff, family, friends, and neighbors Connecting with needed community resources or services
Stabilization	Meeting other financial obligations and dealing with crises Stabilizing or maintaining basic needs
Attitudes and Value	Changing attitudes, norms, and values Respecting others and themselves
Perceptions and	Changing perceptions and feelings
Feelings	Being willing to talk about past experiences, telling their stories and releasing their feelings Having a sense of hope, believing they can make it, and seeing and new options for themselves Having a positive view of themselves, seeing themselves in a new way Recognizing the need for change Being willing and motivated to change
Knowledge	Gaining knowledge Learning what triggers reactions
Skills	Learning new skills, developing coping mechanisms, and making appropriate decisions
Behavior	Adopting new behavior(s)
Policies	Adopting new policies and laws Passing new laws

Note. Adapted from *Outcomes for Success*, by J. Reisman and J. Clegg, 1999, Seattle, WA: Organization Research Service, and Clegg & Associates.

Levels of Outcomes

According to Reisman and Clegg (1994), program-level outcomes include change in individuals, families, organizations, or the community that can be influenced by one

program alone. There are other outcomes an evaluator/researcher can consider: (a) agency-level outcomes, (b) system-level outcomes, (c) cross-system outcomes, and (d) community-level outcomes.

Agency-level outcomes. In a multi-service agency (e.g., Cooperative Extension Service), the long-term goals of each program must support the agency's mission. The agency determines the agency-level outcomes—the potential achievements of the agency's programs (Poole, Davis, Reisman, & Nelson, 2003).

System-level and cross-system outcomes. According to Reisman and Clegg (1999), system-level outcomes include multiple agencies working together in one field to reach a common goal not achievable without collaboration (e.g., Cooperative Extension and the Farm Service Agency helping farmers complete loan applications). Cross-system outcomes include agencies working across disciplines to achieve a common goal (e.g., Cooperative Extension and the local school system sponsoring an agricultural appreciation day).

Community-level outcome. Community-level outcomes include a variety of agencies and disciplines. To achieve a common goal, all partners must engage together in community planning and priority-setting (W. K. Kellogg Foundation, 1998). An example of a community-level outcome is Cooperative Extension, community-based organizations, and cooperatives assisting limited-resources farmers with direct marketing of fresh produce.

The logic model. The program logic model provides the foundation for the outcome-based evaluation (Reisman & Clegg, 1999). According to Frechtling (2007, p.1), "the logic model is a tool that describes the theory of change underlying an

intervention, product, or policy. A logic model is a graphical representation of the theory of change underlying a program, product, or intervention. Three main components are found in a logic model: (a) inputs resources needed to conduct a program; (b) outputs are divided into activities what the organization does and participation is the audience reached; and (c) outcomes the short-term, medium-term, and long-term changes that occur as a result of the program (University of Wisconsin Extension, 2002).

Two additional components, context and impact, are frequently part of a logic model depiction. Context describes the social, cultural, and political aspects of the environment. Impact is the effect the program has on a larger system (Frechtling, 2007). The program logic model determines when and what to evaluate so that resources are allocated effectively and efficiently.

Educational Needs of Limited-Resource Farmers

Reaching limited-resource farmers with educational programs can be challenging because they do not always have access to resources offered by both state and federal agencies. Specifically, many limited-resource farmers have a full-time or part-time job to supplement farm income. Farmers often don't attend meetings because the meetings don't address their needs (Tubene & Holder, 2001).

Building relationships and trust are crucial to meeting the educational needs of limited-resource farmers because of past negative experiences with government agencies. In order for Extension to meet the needs of limited-resource farmers, agents must use a variety of methods to reach the farmers. The following methods are often effective in reaching farmers: (a) individual farm visits, (b) on-farm focus groups, (c) hands-on workshops, (d) networking events, and (e) on-farm demonstrations. Collaborating and

forming partnerships among agricultural agencies helps to identify limited-resource farmers since many farmers use a wide array of services. Partnerships can increase the capacity of agencies and organizations to provide educational and financial assistance to the farmers (Tubene, White, & Rose, 2005).

In order to design successful educational programs, Extension professionals must understand limited-resource farmers' needs and struggles and design programs to address them (Tubene & Hanson, 2002). According to Baharanyi and Zabawa (1996), the following four questions should be addressed by programs targeted for limited-resource farmers:

1. Availability: Are the programs available that target the specific needs of the small farmer?
2. Accessibility: Are those programs that target the farmer accessible?
3. Equity: Are small farm programs funded and delivered in an equitable manner given the population and needs of the small-scale producer?
4. Social capital: Do local farmers have the necessary social capital that allows them access to available programs and other related resources?

Extension and other agricultural agencies serving limited-resource farmers should develop programs that (a) reflect the diversity of farms instead of a one size fits all concept, (b) provide assistance to farmers who do not receive government support, (c) involve limited-resource farmers in program planning so they will benefit from the program, and (d) include collaboration with other agricultural agencies and community-based organizations to develop risk management and alternative agriculture programs (Tubene & Holder, 2001)

Summary

Hampton Institute in Hampton, Virginia, was one of the first 1890 institutions to conduct Extension work and became a model for other 1890 institutions. Hampton Institute's influence expanded beyond the Commonwealth of Virginia when Booker T. Washington accepted the leadership role at Tuskegee Institute. Washington can be considered the "father of the 1890 Extension program" because Tuskegee was instrumental in developing innovative outreach programs for oppressed farmers such as (a) farmers clubs, (b) monthly meetings, (c) Negro Farmers Conferences, (d) Professional Workers Conferences, (e) farmers institutes, (f) fairs, and (g) the "Moveable School." Tuskegee work resulted in 1862 and 1890 land-grant institutions adopting similar programs for farmers in their localities.

The Smith-Lever Act provided the financial base for Extension and created a formal relationship between the 1862 and 1890 institutions. All funds were given to the 1862 institution and the 1890 institutions were asked to cooperate and provide demonstration work for African Americans. This arrangement remained active until 1977 when the Food and Agricultural Act gave funds directly to the 1890 Extension programs. Also, this legislation created an Extension Administrator and Research Director positions at the 1890 institutions.

To develop effective Extension programs, Extension professionals need to understand and practice adult education principles and adult education program planning theories. Malcolm Knowles defined andragogy as the art and science of helping adults learn. The andragogical model is based on six assumptions: (a) the need to know: why, what, and how; (b) the learner's self-concept: autonomous and self-directing; (c) the role

of the learners experiences: resources and mental models; (d) the readiness to learn: life related; (e) the orientation to learning: problem centered and learner centered; and (f) the learner's motivation: intrinsic and extrinsic. The andragogical model is not designed as a "one-size-fits" all for adult education but provides flexibility in planning and implementing quality adult education programs.

Extension professionals can select one programming model or combine models to plan, implement, and evaluate educational programs. The "program planning theory" is a people-centered approach. The theory focuses on the people at the planning table making decisions about specific features of the program. Power, interests, ethical commitments, and negotiations are four dynamics that shape this planning theory. The "conceptual programming model" is a holistic and linear model based on planning, design and implementation, and evaluation. The "interactive model" contains tasks and components and differences among cultures are explored.

Outcomes-based evaluation focuses on the impact the program is having on the participants, staff, agency, and community. To effectively determine program outcomes, Extension professionals must gather information from program participants and stakeholders. Outcomes must indicate the kind of change the program will produce. The following components shape the change process: (a) connections, (b) stabilization, (c) attitudes and values, (d) perceptions and feelings, (e) knowledge, (f) skills, (g) behavior, and (h) policies. Program participants generally begin with the first step and proceed to later steps, but the steps are not always linear.

This research study attempts to fill a gap in the literature regarding programming efforts at 1890 land-grant universities. By specifically addressing how the North

Carolina A & T State University Cooperative Extension program has helped limited-resource farmers enhance social, economical, and environmental outcomes.

Chapter 3

Methodology

This research study was conducted to determine how the North Carolina A & T State University Cooperative Extension Program has helped limited-resource farmers enhance economic, environmental, and social outcomes through agricultural extension education. Chapter 3 contains descriptions of the study's research design and methodology, participants, data collection, data analysis, and instrumentation.

A qualitative approach was selected to discover and explore the thoughts and ideas of the participants. Qualitative research is a naturalistic approach that allows the researcher to understand the phenomenon of interest in a real world setting (Patton, 2001). Strauss and Corbin (1990, p. 17) defined qualitative research as "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification." Qualitative research differs from quantitative research because the researcher seeks illumination and understanding of a phenomenon, instead of causal determination, prediction, or generalization of findings.

The research questions for this study were:

1. How has the North Carolina A & T Extension program helped limited-resource farmers reach program outcomes?
2. What factors affect the North Carolina A & T Extension program's ability to help limited-resource farmers reach program outcomes?
3. How does the North Carolina A & T Extension program involve limited-resource farmers in determining their educational needs and related program outcomes?
4. How does the North Carolina A & T Extension program collaborate with 1862 Cooperative Extension, community-based organization, and other agricultural agencies to help limited-resource farmers reach program outcomes?

Research Design and Methodology

This study used a cross-sectional research design of participant interviews, a focus group, and document analysis to collect data. Interviews are designed to provide the researcher with in-depth information about people's experiences, perceptions, opinions, feelings, and knowledge about the phenomenon of interest (Patton, 2001). Focus groups use a carefully planned series of small group discussions designed to gather information and to understand what people feel and think about an issue, product, or service. Groups are generally conducted with six to eight people. The focus group presents a more natural setting than an individual interview because participants share information and influence with each other just as they do in life (Krueger & Casey, 2000). Document analysis includes reviewing written materials and other documents from organizations, program records, publications, reports, letters, and responses to open-ended surveys (Patton, 2001).

Qualitative research should be evaluated using different criteria than quantitative research because it is based on different philosophical assumptions. Lincoln and Guba (1989) proposed four criteria for evaluating qualitative research: (a) credibility, (b) transferability, (c) dependability, and (d) confirmability. The four criteria reflect the underlying assumptions in qualitative research.

Credibility is established when the results are believable from the study participants' perspective. The participants are the only ones who can legitimately judge the credibility of results. Credibility can be strengthened by code checking, peer debriefing, and member checking. Code checking requires that two people analyze the same data independently and then compare their codes or coding categories. Peer

debriefing includes reviewing the procedures for selecting participants, collecting and analyzing data. In this study, the researcher's committee and Extension faculty not participating in the study reviewed the procedures for selecting the participants, collecting data, and analyzing data. Member checking involves participants reviewing the transcripts and data analysis to determine if the findings accurately capture their perspective (Lincoln & Guba, 1989). In this study, participants reviewed the transcripts to determine if their perspectives were captured and the researcher made corrections accordingly.

Transferability refers to the degree to which findings can be applied to other contexts or groups. To accomplish transferability, the researcher must provide information about the participants' background and experiences, so that readers can judge their degree of similarity to other participants and cases. The purpose of the research must be clearly defined to avoid any confusion or misconceptions (Lincoln & Guba, 1989). In this study, the researcher kept a detailed log with descriptions of the participants' experiences and background. Names were withheld to maintain confidentiality.

Dependability is justification for the researcher's decisions regarding the research process. An audit trail is the main technique used to establish dependability. It involves providing the reader with information regarding how the study was conducted, participant selection, data collection, and data analysis. Information provided should answer the what, when, and why about the study procedures (Lincoln & Guba, 1989).

Confirmability links the research findings to the data. The researcher provides a sample of data analysis that connects the research to the data to prevent readers from

thinking the findings are the product of the researcher's imagination (Lincoln & Guba, 1989). To accomplish this task, the researcher provides quotations that support the research objectives, field notes describing the settings of the observations, and excerpts from documents and records that explain the phenomenon of interest (Lincoln & Guba, 1989).

Participants for the Research Study

Qualitative inquiry focuses on relatively small samples, even single cases. The purpose of qualitative research is to understand the phenomenon of interest and the researcher must select information-rich cases for this in-depth study. Information-rich cases provide insight and in-depth understanding of the phenomenon (Patton, 2001).

Purposeful sampling includes selecting information-rich cases strategically and purposefully; specific type and number of cases selected depends on study purpose and resources (Patton, 2001, p. 243). Purposeful sampling is sometimes referred to as purposive or judgment sampling because the researcher decides the purpose for selecting one participant over another, which participants to include, and the means for contacting participants (Patton, 2001). The study used a purposeful sample to gain in-depth insight into and understanding of how the North Carolina A & T Cooperative Extension program has helped limited-resource farmers reach program outcomes through education.

The purposeful sample for this study consisted of North Carolina A & T Extension agricultural and natural resource specialists (2 of the 4 persons in this role), an Extension associate who works directly with limited-resource farmers (1 of 2), farm management agents (2 of 5), technicians (2 of 5), and farmers (9). Faculty members not selected for the study had been employed for less than one year and thus had only limited

knowledge and experience related to the program. The researcher planned to interview 16 faculty members; however, only seven were willing to share their Extension experience. Letters were mailed to potential participants explaining the purpose of the study and requesting participation (see Appendix A). All participants received a follow-up letter explaining confidentiality, the purpose of the interview, the length of the interview, and potential dates for an interview (see Appendix B). The researcher contacted participants by phone and email to schedule an individual interview. All interview participants received a reminder phone call the day before the interview.

The specialists, associate, agents, and technicians selected met the following criteria: (a) knowledge regarding programs that help farmers reach program outcomes through education, (b) knowledge regarding program components/concepts that impact Extension's ability to help limited-resource farmers reach program outcomes through education, (c) experience involving farmers in needs assessment and program planning, and (d) experience collaborating with the 1862 Cooperative Extension Service, agricultural agencies, and community-based organizations. The farmers selected for the study met the following criteria: (a) a limited-resource farmer (see definition on page 9), (b) participated in 1890 Extension programs, (c) knowledge about how Extension programs are planned and implemented, and (d) implemented agricultural practices introduced by Extension.

Data Collection

Prior to data collection, the Virginia Tech Institutional Review Board approved the research study (see Appendix C). The research included individual interviews, focus groups, and document analysis to collect data regarding Extension programming. A

panel of three Extension specialists reviewed the interview and focus group guide. The purpose of the review was to determine if the interview questions were aligned with and exemplified the research study questions. The interview guide (see Appendix D) was pilot tested with four Extension agents not participating in the study to check for wording and clarifications of questions. Also, the farmer focus group interview guide (see Appendix E) was pilot tested with four limited-resource farmers not participating in the study to check for wording and clarification of questions. The pilot test revealed that all questions on the interview and focus group guides were clear and concise.

Interviews

Researchers interview people to discover what cannot be directly observed. Researchers are often unable to observe feelings, thoughts, intentions, and behaviors that occurred at a previous point in time. Interviewing allows the researcher to enter into the participant's perspective. Qualitative interviewing is based on the assumption that the perspective of others is meaningful, knowable, and can be made explicit. There are three approaches to qualitative interviewing: (a) informal conversational guide, (b) general interview guide, and (c) standardized open-ended interview (Patton, 2001).

The researcher selected a general interview guide as the qualitative interviewing approach for this study. An interview guide includes topics or subject areas to be explored and also allows the interviewer to probe for more details and deeper understanding. The interview guide has three advantages: (a) the interviewer makes wise use of limited time, (b) the interviewer can interview a number of different people more systematically and comprehensively, and (c) the interviewer maintains interaction while allowing individual perspectives and experiences to emerge (Patton, 2001).

Individual interviews were conducted with the agricultural and natural resource specialists, associate, agents, and agriculture and natural resource technicians rather than meeting with them for focus groups. Individual interviews were conducted with Extension personnel because of limited funds for personnel to travel to a central site, end-of- year performance appraisals, and the enhanced willingness of Extension personnel to share information in an interview compared to a focus group. End-of-year performance appraisals are conducted annually to determine if faculty is reaching their programmatic goals, salary increases, and continuous employment. The participants selected a location that was conducive to talking and sharing pertinent information. Each participant signed a consent form granting permission to conduct and record the interview. The researcher instructed all participants that they could stop the interview and the audio recorder at any time without any personal penalty or harm.

The duration of each interview varied between 45 and 60 minutes, depending on the participant's interest in sharing their experiences. All participants were asked the same questions and the researcher asked additional probing questions for deeper insight into the phenomenon.

Focus Groups

Focus groups promote self-disclosure among participants. Researchers want to understand the feelings, comments, and thought process of participants as they discuss issues. Some individuals are comfortable with self-disclosure and others require trust, effort, or courage. Focus group interviews typically have four characteristics or features: (a) a focus on people, (b) documentation of human characteristics, (c) qualitative data, and (d) focused discussion (Krueger & Casey, 2000).

Focus groups generally consist of six to eight people; however, they can range from four to twelve. Groups must be small enough for participants to have an opportunity to share insights and large enough to provide different perspectives. Small groups of four or five are defined as mini-focus groups and have a distinct advantage in logistics. Mini-focus groups can be accommodated in settings where space is at a premium. To provide in-depth insight, focus group participants must have similar experiences (Krueger & Casey, 2000).

Traditionally, focus groups consisted of people who were complete strangers but in some communities it is difficult to locate strangers. When focus groups are used to collect data, caution should be used when selecting friends, family members, and close-knit groups because some participants may not share pertinent information or be biased. Also, the moderator can negatively impact the results if he or she is readily identified with the organization conducting the study (Krueger & Casey, 2000).

The objective of the focus group is to collect data of interest to the researcher. By using at least three focus groups, the researcher can compare and contrast data. Focus groups differ from some other group interactions because the goal is not to reach consensus among participants (Krueger & Casey, 2000).

Focus group questions are predetermined, phrased, and sequenced so they are easy to understand and logical for the participant. Most questions are open-ended; questions at the beginning tend to be general, and questions at the end are more specific and yield the most useful information (Krueger & Casey, 2000).

In this study, one focus group was conducted with nine limited-resources farmers from southeast North Carolina who participated in educational programs conducted by

the North Carolina A & T Cooperative Extension Program. One farmer focus group was conducted because of scheduling conflicts. The Extension agents recommended limited-resource farmers to participate in the focus group based on the criteria provided by the researcher.

County-based Extension agents assisted the researcher in identifying farmers to participate in the focus group. Letters were mailed to these farmers explaining the purpose of the study and requesting their permission to participate (see Appendix F). Also, the agents and technicians arranged a meeting location for the focus group and contacted the farmers by phone to remind them about the research event one day before the scheduled focus group.

Prior to the focus group, the researcher explained the purpose of the research study and participants signed a consent form granting permission to conduct and to record the focus groups. Two Extension agents served as observers in the focus group to record participants' body language during the interview, record the interview, and help keep track of time. The duration of the focus group discussion was 60 minutes.

There are five categories of focus group questions: (a) opening: participants get acquainted and feel connected, (b) introductory: begin discussion of topic, (c) transition: move into key questions, (d) key: provide insight into the area of central concern in the study, and (e) ending: helps researchers determine where to place emphasis and brings closure to discussion (Krueger & Casey, 2000).

Document Analysis

Document analysis provides a rich source of information about organizations and programs. All organizations produce both public and private records that researchers can

analyze and compare with other data. Initially, researchers seek permission from the organization to access documents such as, program records, budget records, and organizational rules and regulations. These documents can provide the researcher with information that cannot be observed or secured through interviews (Patton, 2001).

For this study, the researcher analyzed the following documents: (a) impact and success stories submitted by specialists, associates, agents, and technicians, (b) *Solutions* (NC A & T Extension program annual impact report 2004-2010) and (c) advisory committee minutes. These documents supplemented data provided through interviews and the focus group.

Data Analysis

According to Denzin (1978), triangulation strengthens a study by combining data from a variety of methods. Combining methods can include using both qualitative and quantitative approaches or multiple qualitative approaches. There are four basic types of triangulation: (a) data triangulation: the use of a variety of data sources in a study; (b) investigator triangulation: the use of several researchers or evaluators; (c) theory triangulation: the use of multiple perspectives to interpret a single set of data; and (d) methodological triangulation: the use of multiple methods to study a single problem or program. The researcher for this study used triangulation by examining and comparing data from individual interviews, focus groups, and document analysis.

Relying on one source of data collection can lead to errors connected to a particular method (e.g., loaded interview questions, biased or untrue responses). Using multiple methods improves the study by combining the strengths of the methods used. A common misconception of triangulation is to demonstrate that different data sources

produce the same result; however, the intention is to test for consistency. Different methods of data collection may yield different results. Finding inconsistencies should not be viewed as weakening the credibility but an opportunity to study the relationship between the inquiry approach and the phenomenon of interest (Patton, 2001).

The researcher audio recorded six individual interviews and the focus group. The researcher compiled notes for the seventh individual interview, which was conducted by telephone. This interview was conducted by telephone because the participant was unable to schedule a face-to-face interview. Following each interview and focus group, the researcher created a detailed transcript and pseudonyms were assigned to identify each participant instead of using participants' names to maintain confidentiality. According to Patton (2001), qualitative data analysis should involve recording themes, establishing basic categories within these themes, and comparing and contrasting data collected across all data sources, themes, and categories. Transcript-based analysis includes careful listening to the audio tape and developing an unabridged transcript (Krueger & Casey, 2000). Upon completion of each transcript, the researcher developed a chart to record emerging themes and categories. After all transcription was completed, the researcher compared and contrasted data across all the data sources.

For this study, the researcher analyzed documents and compiled excerpts from impact and success stories, program records, conference proceedings, program evaluations, and published articles. Data from document analysis were triangulated with interview and focus group data to examine common and uncommon themes and categories.

Instrumentation

The researcher developed an interview guide with 11 questions (see Appendix D) to address the research questions for the Extension administrator, specialists, associates, agents, and technicians. The focus group guide for the farmers (see Appendix E) consisted of eight questions based on the research questions.

Summary

The purpose of this research was to determine how the North Carolina A & T State University Cooperative Extension Program has helped limited-resource farmers enhance economic, environmental, and social outcomes through agricultural Extension education. To accomplish this purpose the researcher conducted and analyzed individual interviews, a focus group, and document analysis.

Interview guides were developed by the researcher that aligned with the research questions. The researcher's graduate committee and Extension faculty not participating in the study provided expert review of the interview guides.

The study qualitatively examined programs that helped farmers reach outcomes through educational programs; components and concepts that impact Extension's ability to help farmers reach program outcomes through extension education; the involvement of farmers in educational needs assessment and program planning; and collaborative efforts that helped farmers reach educational outcomes.

Chapter 4

Findings

This research study examined how the North Carolina A & T State University Cooperative Extension program has helped limited-resource farmers enhance economic, environmental, and social outcomes through its 1890 Extension education program. This inquiry also described collaborative educational efforts among North Carolina A & T, North Carolina State University, other 1862 land-grant universities, community-based organizations, and government agencies providing nonformal education and services to limited-resource farmers. Chapter 4 provides a detailed discussion of these phenomena experienced by Extension personnel and limited-resource farmers.

From November 17 to December 14, 2009, seven individual interviews were conducted with Extension personnel associated with North Carolina A & T University. The Extension specialists and associate are campus-based faculty and the agents and technicians are county-based faculty. One focus group was conducted with nine farmers representing four counties in eastern North Carolina. The campus-based and field faculty selected the location for their individual interview. The farmers' focus group session was conducted following an Extension planned program at the Center for Environmental Farming Systems in Goldsboro, North Carolina. Also, data were captured from impact statements, success stories, meeting agendas, and *Solutions* (the NC A & T Cooperative Extension program annual success stories publication from 2004-2010).

The researcher used the following strategies to reach potential research participants: (a) recruitment letters surface mail and email (see Appendices A and B), (b) telephone calls, (c) face-to-face visits with campus-based faculty, and (d) recruitment of

farmers through agents. Financial support was a limiting factor for participation because of the travel required for field faculty and farmers to participate in the interviews.

Data were analyzed by comparing categories and themes in the transcribed interviews, focus group, and excerpts from various documents. The researcher coded the data by reading all transcripts line-by-line and identifying categories and themes related to the four research questions. Identified in Table 3 are the four research questions, categories, and themes for this study. The faculty and limited-resource farmers' comments were consistent with document findings. However, the documents emphasized economic impact more than the interviews and focus group. Categories and themes were aligned with the research questions and placed in a chart for each individual interview and focus group. Participant anonymity and confidentiality were maintained throughout the study.

Table 3

Categories and Themes

Research Question 1	Research Question 2	Research Question 3	Research Question 4
<p>How has the NC A &T Extension Program helped limited-resource farmers reach program outcomes?</p>	<p>What factors affect the NC A & T Extension Program's ability to help limited-resource farmers reach program outcomes?</p>	<p>How does the NC A&T Extension Program involve limited-resource in determining their educational needs and related outcomes?</p>	<p>How does the NC A & T Extension Program collaborate with 1862 Cooperative Extension, community-based organizations and other agricultural agencies to help limited-resource farmers reach program outcomes?</p>
<p>Category 1A: Economic, Environmental, and Social Outcomes Met</p>	<p>Category 2A: Qualities that encourage limited-resource farmers' participation in Extension Programs</p>	<p>Category 3A: Planning educational programs</p>	<p>Category 4A: NC State</p>
<p>Theme 1A1: FACT</p> <ul style="list-style-type: none"> • Record keeping • Marketing • Emailing 	<p>Theme 2A1: Caring for farmers and understanding needs</p>	<p>Theme 3A1: Involving limited-resource farmers in program planning</p>	<p>Theme 4A1: Joint Extension Programs</p>
<p>Theme 1A2: Plasticulture</p> <ul style="list-style-type: none"> • Reaching markets earlier • Increased farm income 	<p>Theme 2A2: Establishing trust</p>	<p>Theme 3A2: Using advisory committees or councils to plan programs</p>	<p>Theme 4A2: Working as a team</p>
<p>Theme 1A3: Pastured-Swine Production</p> <ul style="list-style-type: none"> • Improving environmental practices • Supporting animal welfare practices • Increasing price per animal 	<p>Theme 2A3: Building a relationship</p>	<p>Category 3B: Involving limited-resource farmers in teaching and program evaluation</p>	<p>Theme 4A3: Improving the relationship</p>
	<p>Theme 2A4: Utilizing a one-on-one approach</p>	<p>Theme 3B1: Peer teaching by limited-resource farmers</p>	<p>Category 4B: 1862 land-grant universities</p>
	<p>Category 2B: Factors preventing limited-resource farmers participation in Extension programs</p>	<p>Theme 3B2: Transfer of learning</p>	<p>Theme 4B1: Collaborating with other 1862 land-grant universities.</p>
	<p>Theme 2B1: Scheduling relevant and timely programs</p>		<p>Category 4C: Community-Based Organizations</p>
			<p>Theme 4C1: Providing educational programs and technical assistance</p>
			<p>Category 4D: Other agricultural agencies</p>
			<p>Theme 4D1: Meeting the needs of limited-resource farmers</p>

Researcher's Role

The researcher gained valuable insight about: (a) Extension programs that enhance limited-resource farmers' economic, environmental, and social outcomes; (b) qualities of the NC A & T Extension faculty that encourages farmers to participate in Extension programs; (c) factors that prevent limited-resource farmers' participation; and (d) collaboration with NCSU, community-based organizations, and other agricultural agencies. The interviews, focus group, and document analysis led the researcher to reflect on his experiences as an Extension agent. Also, the researcher learned that farmers' involvement in generating programming ideas is critical because farmers are expected to participate in programs and recruit other farmers to participate.

The researcher knew the Extension specialists, associate, agents, and technicians from his experience as an Extension agent in North Carolina. As a result, it was more comfortable conducting the interviews for the research and the participants were more willing to share pertinent information and documents. The duration of the individual interviews were approximately 45 to 60 minutes. The researcher connected with the farmers by sharing information about himself and asking the farmers to share information about their experiences with the NC A & T Extension program. As a result, the majority of the farmers were talkative and shared information about their farming experiences and working with NC A & T Extension programs. The duration of the focus group session was approximately 60 minutes.

Characteristics of Participants

Participants had a variety of years of experience and roles with NC A & T Extension. Three participants were campus-based faculty and four participants were

county-based faculty. Table 4 identifies the campus and county-based faculty role, years of experience with the NC A & T Extension program, age range, and educational level of faculty.

Table 4

Campus and County-Based Faculty

Role	Years of Experience	Age Range	Education Level
Specialist	26	50-59	Ph.D.
Specialist	9	50-59	Ph.D.
Associate	11	30-39	M.S.
Agent	16	40-49	M.S.
Agent	11	50-59	M.S.
Technician	9	40-49	Diploma, Farm Work Experience
Technician	7	30-39	Associate Degree

The limited-resource farmers in this study had substantial years of experience and most dealt with produce as their primary commodity for production. The farmers represented four counties in eastern North Carolina. Immediately prior to the focus group, the farmers participated in a Record Keeping and Income Tax program. As a result, the researcher had to reduce the amount of time allotted for the focus group because the farmers were tired and some of them lived 1.5 to 2.5 hours away from the Center for Environmental Farming Systems in Goldsboro, North Carolina, where the program and focus group were held. Two Extension agents were present during the focus group session, and their presence may have impacted the farmers' willingness to share

information. Table 5 shows farmers' years of farming experience, commodities produced on their farms, gender, and ethnicity.

Table 5

Limited-Resource Farmers

Years of Farming Experience	Commodities Produced	Gender	Ethnicity
50	Row crops, swine, cattle, produce	Male	American Indian
50	Produce, swine, cattle	Male	African American
31	Produce, swine, cattle	Male	African American
30	Row crops, sweet potatoes, and swine	Male	African American
30	Produce	Male	American Indian
20	Produce	Female	African American
20	Produce	Male	African American
15	Produce, flowers, goats	Female	African American
10	Produce, greenhouse and nursery	Male	American Indian

Findings by Research Question

The individual interviews were conducted using an 11-question interview guide (see Appendix D) with additional probing questions. For the focus group, a seven-question interview guide (see Appendix E) with additional probing questions was used.

The following research questions were addressed:

1. How has the North Carolina A & T Extension program helped limited-resource farmers reach program outcomes?
2. What factors affect the North Carolina A & T Extension program's ability to help limited-resource farmers reach program outcomes?

3. How does the North Carolina A & T Extension program involve limited-resource farmers in determining their educational needs and related program outcomes?
4. How does the North Carolina A & T Extension program collaborate with 1862 Cooperative Extension, community-based organizations, and other agricultural agencies to help limited-resource farmers reach program outcomes?

Descriptive summaries of the findings including participant quotations related to the research questions follow.

Research Question 1

How has the NC A & T Extension Program helped limited-resource farmers reach program outcomes?

The Extension faculty members and limited-resource farmers identified three programs that helped farmers reach economic, environmental, and social outcomes: (a) Farmers Adopting Computer Training (FACT), (b) Plasticulture, and (c) Pastured-Swine Production. All Extension agents and technicians implemented the FACT program in their respective counties. Additionally, all farmers who participated in the research study participated in the FACT program. All faculty members except one agent and all farmers participated in the Plasticulture program. One Extension specialist, one agent, and two farmers were involved with the Pastured-Swine Production program. The comments about these programs by faculty members and farmers were consistent with each other.

The major category recorded was economic, environmental, and social outcomes met. The major themes in this category were Farmers Adopting Computer Training (FACT), Plasticulture, and Pastured-Swine Production.

Economic, Environmental, and Social Outcomes Met

Farmers Adopting Computer Training

FACT is a six month computer literacy program for limited-resource farmers addressing: (a) keyboarding, (b) word processing, (c) Excel, (d) email, and (e) Internet use. FACT is a joint educational program between NC A & T State University Extension program and the North Carolina Community College System. This program description was provided by a field faculty member.

Record keeping. The participants discussed how they used the computer for record keeping to meet their financial and organizational goals. One farmer stated, "It has been excellent for record keeping on the farm for what crops were planted, when the crops were planted, how much herbicides were used, different chemicals used, and seed application rates." A second farmer replied, "I put financial records on the computer." A third farmer responded, "Keying in all of my cost and plus what I sell. So when income tax comes in a few more days, all I have to do is just tally the numbers, and makes life much easier." An Extension faculty member echoed, "They can keep track of records themselves and don't have to pay anybody else to do it."

This information was retrieved from a faculty member's written success story. Seventeen participants increased their farm income by 10 to 15% by maintaining farm records. Additional record keeping information was retrieved from *Solutions*, the NC A & T Extension Program annual impact statement report. A farmer stated, "The computer helped me to see my pitfalls, years before I would have gotten there. I'm turning my entire farming operation around."

Marketing. The participants revealed how they used the computer to market produce. A faculty member replied, "The computer helps with marketing and doing their own webpage." A second faculty member said, "They do marketing over the Internet and use their computers to do flyers on the farm." A third faculty member responded, "Farmers have used computers to develop their own signs to use for marketing and advertising at the farmers market, on the back of the pickup truck, and used them on the highway." A farmer replied, "They set up websites to market produce."

Additional marketing information was captured from a faculty member's written success story. Sixteen limited-resource farmers created web pages on the North Carolina Department of Agriculture and Consumer Services and Local Harvest websites to promote their agricultural products.

Emailing. Participants shared using email to communicate with agents and specialists. One faculty member stated, "All farmers that went through the classes are using email." A second faculty member said, "When they got their own computer, they would email me (agent)." A third faculty member responded, "Most of them email Mrs. ___ who was the project coordinator and she would share some of the responses with me."

Plasticulture Program

The Plasticulture Program uses white and black plastic as mulch for small fruits and vegetables. Water and nutrients are provided directly to the roots through drip tape or tubing with small orifices (openings). The program's purposes are to extend the growing season, reduce herbicide and fertilizer use, and minimize water use, saving the farmer

time and money. This description was provided by a field faculty member in response to interview questions.

Reaching markets earlier. Participants expressed that the Plasticulture Program extended their growing season by reaching produce markets earlier than bare ground production and helped them implement best management practices. The plastic warms the soil temperature and the crops produce earlier than bare ground production. Several faculty members confirmed, "The program has helped farmers get their produce earlier, it has helped them plant earlier." One faculty member indicated, "The program was basically designed to enable the farmer to reach markets earlier because the black plastic would enable the soil to warm faster." A second faculty member revealed, "It suppresses weeds more successfully, the only weeds are the ones in the hole of the plastic or maybe the edges of the plastic." A farmer stated, "It cuts down on the amount of herbicides if you managed the program the way it should be managed." A second farmer indicated, "It provides the plant with a better seedbed, a better growth bed because you are able to feed water through the drip tape. You are able to feed the nutrients through the tape."

Information collected from *Solutions* and a faculty member's written success story supports the data from individual interviews and focus group information. A farmer said, "By April crops were growing faster than I'd ever seen it grow before on bare dirt. We picked tomatoes until November." Also, one farm family planted okra on plastic and reached the produce market earlier and generated an extra \$500 of income.

Increased farm income. Plants produced on plastic provided farmers with additional income because the growing season was extended and the produce quality was improved. The following quotations were retrieved from *Solutions*. One farmer stated,

“Other farmers were getting \$12 a box but plastic-raised tomatoes generated \$17 per box.” A faculty member responded “_____ would see an increase in his income, it doubled too, from \$10,000 to \$20,000.” Additional information from a written success story confirms that plasticulture increases net farm income. Fourteen limited-resource farmers generated a total of \$165,000 of extra farm income using this practice.

Pastured-Swine Production

Pastured-swine roam freely in their natural environment consuming grasses and other plants that their bodies can effectively digest. The pastured-swine system provides animal welfare, economic, environmental, and public health benefits. The antibiotic-free and hormone-free pork is superior in flavor to animals raised in confinement (Joseph & Ezekwe, 2008).

Improving environmental practices. Protecting the water source is a primary focus of pasture-raised swine system (Joseph & Ezekwe, 2008). The following information was retrieved from faculty members’ success stories. Farmers in this program prevented waterway contamination by utilizing fencing, rotational practices, and buffer strips between pasture and ditch. To reduce fertilizer cost, farmers used swine manure and saved approximately \$150 per acre.

Supporting animal welfare practices. Swine raised outdoors are able to move about and enjoy a higher quality of life than confined animals (Joseph & Ezekwe, 2008). A farmer stated, “I planted ground covers for my animals to provide a more animal friendly environment and follow animal welfare approved production practices.” A second farmer indicated, “Animal welfare inspectors come out to the farms maybe twice

a year and they audit the farmers. They want to make sure they are following the practices.

Increased price per animal. Animals raised outdoors receive a higher price per unit than animals raised in confinement (Joseph & Avis, 2008). One farmer confirmed the previous statement, "I now sell my animals for \$100 more per animal than before." A faculty member responded, "Farmers are probably averaging a \$1.04 per pound. They probably get close to \$200 per pig versus growing them in house, maybe only getting .55 to .65 per pound." Additional information from success stories supports the faculty member's statement. Fifteen farmers in the program marketed 60 hogs per week to Whole Foods grocery chain and received \$1.04 per pound. The average hog weight was 200 pounds and generated a combined income of \$648,960.

Summary

Table 6 identifies the programs that have enhanced limited-resource farmers' economic, environmental, and social outcomes.

Table 6

Programs that Enhanced Limited-Resource Farmers Economic, Environmental, and Social Outcomes

Program	Outcomes	Types of Outcomes
Farmers Adopting Computer Training	Maintain farm records	Economic
	Increase farm income	Economic
	Design web pages for marketing	Economic, Social
	Emailing specialists, agents, technicians, and farmers	Social
Plasticulture	Reach markets earlier	Economic
	Reduce herbicide use	Environmental
	Reduce fertilizer use	Environmental
	Increase farm income	Economic
Pastured-Swine	Reduce waterway pollution	Environmental

Research Question 2

What factors affect the NC A & T Extension Program's ability to help limited-resource farmers reach program outcomes?

Extension faculty and farmers discussed qualities that encourage farmers' participation in Extension programs. In addition, both faculty members and farmers discussed factors that prevent farmers from participating in Extension programs. Both faculty members and farmers agreed that caring about farmers and building a relationship with them were vital qualities of faculty members that encourage farmers' participation in Extension programs. Faculty members discussed that the one-on-one approach is beneficial establishing trusting relationships. However, the farmers did not mention this one-on-one approach.

Both faculty members and farmers discussed factors that prevent farmers from participating in Extension programs. Faculty members discussed that scheduling relevant and timely programs is a factor preventing farmers from participating in Extension. They believed that programs must address farmers' needs and be planned around their schedule. Conversely, farmers did not discuss scheduling and relevant programs.

The categories observed were qualities that encourage limited-resource farmers' participation in Extension programs and factors that prevent limited-resource farmers' participation in Extension programs. The major themes are caring for farmers and understanding needs, establishing trust, utilizing the one-on-one approach, and scheduling relevant and timely programs.

Qualities that Encourage Limited-Resource Farmers' Participation in Extension Programs

Caring about farmers and understanding needs. According to Tubene and Holder (2001), Extension faculty must demonstrate that they care about farmers and understand their diverse needs. One faculty member indicated, "I do care about what farmers' issues are and the problems they go through." A second faculty member replied, "We are aware of certain needs or certain issues that they may have and we try to be aware of that and develop our programs, publications, or whatever evaluations, things like that." A farmer stated, "They call you, that fascinates me, and let you know the information is out there and see if you need help and if you are coming to the program."

Establishing trust. All of the participants indicated that once trust is established between Extension faculty and limited-resource farmers, they are more likely to participate and encourage other farmers to participate. A faculty member replied, "It doesn't take long to build up trust speaking with the person, but working with them on financial records, it generally takes a while." A second faculty member stated, "Once you build the trust, that's the key." A third faculty member stated, "That trust barrier, in a sense, comes from years down the road." A fourth faculty member said, "Once you can relay the information and gain their trust, I believe you will open yourself up for them to participate." One farmer said, "If we trust them, we will work with them." Several farmers agreed with the statement.

Building a relationship. The participants were adamant that building a relationship was the foundation to creating an Extension program that meets limited-resource farmers' programming needs. One faculty member responded, "I can honestly

say some of the farmers I talk to and work with simply say “yes” because I am the one asking.” A second faculty member stated, “Sometimes it takes getting on the phone and calling and saying, “Sir, is there anything I can do to help you today?” Sometimes building a relationship like that is good; it will help you.” A third faculty member responded, “I know when I meet a farmer for the first time, the first couple of weeks is spent getting to know the farmer.” A farmer indicated, “It depends on who you know. He knows Dr. ___ more and we know Mr. ___ more. If you have worked with Mr. ___ more, it depends on who you associate with better.”

Utilizing a one-on-one approach. The participants believed that one-on-one meetings were effective in addressing limited-resource farmers’ educational needs. A faculty member shared, “My observation is, a program that does what you describe builds a relationship one-on-one, practical, would add value over an extended period of time.” Another faculty member said, “Trying more or less to work with growers one-on-one and explain what programs we offer and benefits to them has seemed to probably work the best.” A third faculty member indicated, “Probably one-on-one is the biggest impact I’ve seen.” A fourth faculty member suggested, “You will talk to a grower one-on-one and they will mention somebody else and that builds your grower base.”

Factors Preventing Limited-Resource Farmers’ Participation in Extension Programs

Scheduling relevant and timely programs. Extension faculty should avoid planning programs that interfere with planting and harvesting tasks. One faculty member said,

Many of the farmers in North Carolina are part-time farmers and are doing other things, and that is a major challenge in terms of time allocation. They are full-time working public jobs, and then they are doing fairly complex farming. They have

other things that go on in people's lives. I think the issue of scheduling, lets people know things ahead of time.

A second faculty member stated, "When the weather is right for farming, farmers are out there because that's how they make their living. When programs or workshops can be set around standard farming time then we need to do that." A third faculty revealed, "You have to communicate what it is and offer value, that's relevant to them. You don't need to tell them what you want to tell them, you got the value in terms of stuff." One farmer responded, "He stays on you about upcoming programs. He's not going to let you miss anything." Another farmer stated, "He gives us a list of events going on that month ahead of time."

Research Question 3

How does the NC A & T Extension program involve limited-resource farmers in determining their educational needs and related outcomes?

Extension faculty believed it was imperative to gather programming information and involve farmers in program planning. Both agents and technicians reported using advisory and specialized committees of farmers and business people to determine and prioritize program needs. Also, the farmers discussed serving on advisory and specialized committees to generate program ideas and problem solving.

Farmers were willing to assist each other through on-farm demonstrations and mentors. Additionally, farmers were willing to use their equipment to help other farmers.

The agents and technicians evaluated farmers' learning by observing. There was no evidence to support more formal program evaluation.

The main category identified was planning educational programs. The assorted themes were involving limited-resource farmers in program planning, using advisory

committees or councils to plan programs, peer teaching by limited-resource farmers, and transfer of learning.

Planning Educational Programs

Involving limited-resource farmers in program planning. The key to good program planning starts at the grassroots level (Cervero & Wilson, 2006). One farmer indicated, "It's a brainstorming. If we have a problem, we talk about it and come up with thoughts and ideas." A second farmer suggested, "We had to go to several different meetings and talk about the farmers' market and we brought it back to the group and determined what to do." A faculty member responded, "It is critical for me to get some voices of producers right from the get go in your layout." A second faculty member replied, "About four or five growers and we probably meet three times a year to kind of go over what programs they are interested in, what they kind of want to see." A third faculty member revealed, "I had them write down some programs that they'd like to see and then we prioritize them and come up with the best ones." A fourth faculty member indicated,

At least when you're planning you've got to be there, you can't plan a program sitting in your office. Get a good idea, look at the literature, you say does this make sense. You got to do things. Ah implementation, your how farmers learn research has indicated have people listen to farmers, present experiences, have them involved in demonstrations.

A fifth faculty member stated,

I also add that my observation in agriculture is that our program design is less formal, less clean, less curriculum design, than the people in 4-H. The people in 4-H are doing an outstanding job of laying out from A to Z. Family and Consumer Sciences does a great job along those lines. Agriculture is going the other way around. The event kind of drove what you were doing. Extension agents get called in for specific problems. We are trying to go in more of a planned way. We are trying to get ourselves more coherent. I'm not sure agriculture agents are going to do planned programs.

Using advisory committees or councils to plan programs. All of the agents and technicians in this study used advisory committees or councils consisting of farmers and business people to gather ideas and plan programs. One faculty member said, "Our small planning committee tries to get together and we ask growers what programs they'd like to see. That probably works out better than anything." A second faculty member shared, "The advisory councils or committees help us determine which programs are actually of interest, what programs are needed, what people are interested in, and what they want to learn about." A third faculty member stated, "I know we have a strategic planning council or advisory committee that consists of farmers. What we do is get advice or information from them about what their needs are, key areas that we can address." One farmer said, "It's a brainstorming. If we have a problem, we talk about it and come up with thoughts and ideas."

The minutes from Small Farm Specialized Meetings confirm that farmers are involved in prioritizing programming needs. During these meetings, farmers listed issues in their communities (e.g., availability of farmers' market, alternative agriculture, information for new farmers, and youth involvement in agriculture). They chose the following priority issues: (a) farmers' markets, (b) credit and grants, and (c) vocational programs.

Peer teaching by limited-resource farmers. Extension programs often sponsor agricultural field days to demonstrate the latest production practices. However, many limited-resource farmers do not attend field days. To address this, Extension specialists and agents help farmers establish on-farm demonstrations of the latest practices. In addition, farmers serve as mentors and peer helpers to other farmers. One farmer

revealed, "I've help put the plastic down on two or three farms. If they didn't have a tractor, I would use my tractor. If they had a problem they would come and ask." A second farmer indicated, "The last computer class I worked with at _____, I been through it and helped the students in there carry on and give them the basics on showing them how to do it and everything." A third farmer replied, "What I'm trying to do is find some way to help these people be successful with farming." A faculty member offered, "We have had a couple of farmers do on-farm demonstrations. We tried to get farmers involved in train-the-trainers programs. Programs that help train other farmers, we have done that." A second faculty member responded, "You know somebody may have a question about something dealing with production and one farmer might talk about what worked for him and what did not work for him. It just turned into a big discussion."

Transfer of learning. To improve Extension programs, specialists and agents often visit farmers to determine if transfer of learning and behavior or practice change has occurred. One faculty member responded,

I will pick up the phone and call or go out for a visit. "How is it going? Is it going well? Is it working for you? Are you making a profit on it?" So forth. Anywhere from paper to verbal as far as finding out what was good or what was bad.

A second faculty member suggested,

What I try to do is go back several months later and ask farmers, speak with farmers on the phone, or go visit. The case with the webpage, you know, see whether they got any persons to visit or view their webpage on the Internet.

A third faculty member indicated, "We are currently in the process of interviewing persons who attended the tour to try to see which stops they like."

Research Question 4

How does the NC A & T Extension program collaborate with 1862 Cooperative Extension, community-based organizations, and other agricultural agencies to help limited-resource farmers reach program outcomes?

The NC A & T Extension Program collaborates with the NC State Cooperative Extension Service, other 1862 Cooperative Extension Services, community-based organizations, and other agricultural agencies to plan educational programs for limited-resource farmers. The NC A & T Extension program faculty members have specific assets they bring to planning. Additionally, they were willing to collaborate with other organizations to provide cutting edge and innovative educational programs to limited-resource farmers. Limited-resource farmers were often overlooked by other agricultural agencies. The NC A & T Extension program recruited limited-resource farmers to participate in agricultural government programs.

The categories observed were North Carolina State University, 1862 Cooperative Extension Service, community-based organizations, and other agricultural organizations and agencies. The themes were joint Extension programs, working as a team, improving the relationship, collaborating with 1862 land-grant universities, providing educational and technical assistance, and meeting the needs of limited-resource farmers.

North Carolina State University

Joint Extension programs. To effectively meet the needs of limited-resource farmers, the NC A & T Extension program collaborates with North Carolina State University to plan and implement programs. By working together, the two universities build on each other's expertise and talents. A faculty member revealed, "They call on us

because they perceive we have an interest and expertise that is of use to them; farmers market stuff, North Carolina State doesn't have as much in the way of support in that area. A second faculty member indicated, "We work together on different programs, on tours, and providing information to the farmers." A third faculty member revealed, "We have done several regional grower schools here. We had specialists from both institutions. We had cooperation from both institutions on that." One farmer stated, "With the swine operation they both have been down to give lectures and seminars, A & T and NCSU." A second farmer shared, "They both work together and do programs, for instance the plastic or other programs. They work together pretty good. I am pretty satisfied."

Working as a team. Both NC A & T and NCSU work together to provide educational programs and technical assistance for limited-resource farmers. This was explicated during the individual interviews and focus group session. A faculty member said, "I got a lot of help and resources from both NC State and NC A & T. They've kind of provided me with whatever I needed to do my job." A second faculty member replied, "Being in the office day in and day out and working with them, it kind of makes it a real cohesive relationship you might say." A third faculty member responded, "I call NCSU personnel on numerous occasions to ask them different things. Maybe it's an insect I don't know what it is. Take a picture and email and call the right person and we go over it." A fourth faculty member suggested, "We have a combined NC A & T and NCSU newsletter in this office for all the agricultural information."

Improving the relationship. Most participants believed the relationship between NC A & T and NCSU was good. However, there is room for improvement. A farmer

indicated, "The same program going at the same time; they should not duplicate using tax payers' money." A faculty member revealed,

I am not sure if they know what type of programs we do and what type of audience we serve. You know it's like if we all communicated more and worked with each other more and had more talks and conversations, our relationship probably would improve.

A second faculty member stated,

We do have resources to offer to the mix. We have ways in which A & T's presence in a proposal or in a program materially improves, gives it a much better chance of being funded. But then the reciprocity of value, being real players, I think is a constant challenge.

A third faculty member shared, "The other thing is, from a field faculty standpoint, sometimes specialists don't answer the calls as quickly." A fourth faculty member responded,

I think it needs to be improved. I just think there are some differences when it comes to A & T and NC State Extension Programs. In my office it seems a lot of the white agents cater to white farmers. If a black farmer comes in the office, they send him to me. I don't think it should be like that. I think we should cater to everybody. We are working with everybody.

1862 Land-Grant Universities

Collaborating with other 1862 land-grant universities. The NC A & T Extension Program collaborates with other 1862 land-grant universities to provide educational programs to limited-resource farmers. One faculty member said,

I work with a project called County Animal Security Health Network (CASHN) which is through the Center for Zoonotic Disease at Texas A & M University. It was a rapid emergency response type of program. A lot of times small farmers are the ones left out of the loop as far as getting information. We collaborated with Texas A & M University to improve the project. I believe it was six or seven other states involved on the project.

A second faculty member replied,

We had this project called Mobilizing Against Threats to Community Health (MATCH). That project was with Clemson. We brought in NC State agents and trained them on how to respond in an event of an emergency related zoonotic disease outbreak.

Community-Based Organizations

Providing educational programs and technical assistance. Extension personnel often increase their clientele base and improve programs by working with community-based organizations (Tubene & Holder, 2001). A faculty member said, "I have assisted a lot of community-based organizations. Writing grants that may benefit small and limited-resource farmers." A second faculty member replied, "The thing that sticks out to me is good agricultural practices training, food safety training with them to serve limited-resource farmers." A third faculty member responded, "The one program I did with ___ was on estate planning."

Other Agricultural Agencies

Meeting the needs of limited-resource farmers. The NC A & T Extension Program collaborates with other agricultural agencies to meet limited-resource farmers' educational needs. A faculty member indicated, "The Department of Agriculture and the Department of Health come to the meetings to talk about food safety issues." A second faculty member stated, "I do collaborate with the Soil and Water Conservation Office. We make farm visits together." A third faculty member shared, "In February we had a government meeting with representatives from Farm Service Agency, Natural Resource Conservation Service, Rural Development, North Carolina Department of Agriculture, and the Forestry Service. We tried to get information out to limited-resource farmers about programs we have available." A third faculty member replied, "We work with FSA. We put on a training and have them come in and talk to farmers about how they can

help benefit the farmers' operation through loans or some type of resources they have available. A fourth faculty member responded, "I had a marketing person from NCDA to come in and do a session for the farmers on direct marketing and everything associated with direct marketing."

The findings from faculty members' written success stories support a good working relationship with other agricultural agencies. Nine limited-resource farmers in two eastern North Carolina counties received e-forms training from the Farm Service Agency. Farmers learned how to complete and submit electronic applications. The North Carolina A & T Extension Program also collaborate with the North Carolina Department of Agriculture Pesticide Division to dispose of farm chemicals and containers. A total of 444 containers and 5,315 pounds of farm chemicals were collected and disposed of in two eastern North Carolina counties. The Natural Resource Conservation Service, Soil and Water Conservation District and NC A & T Extension Program sponsored a drought relief and pastured management program. Fourteen farmers received a combined \$40,328,00 in drought relief funding.

Additional Findings

The three comments below are not directly related to the four research questions, but the findings add value to this research study by showing the impact of Extension programs in North Carolina. One faculty member suggested,

I think being at a university, we have the capacity to do big things that small organizations wouldn't. We've got our specialists, university research farm, we conduct field days. We don't have everything but I think collaboration is real good.

A second faculty member stated, "Without Extension, who would take up all the slack? Extension is a help across the state and without them I think it would be a large loss in the community." A third faculty member shared,

I wonder about Extension being trapped within a College or School of Agriculture. Many of the needs out here may be in the areas of education, nursing, business, fine arts, or social sciences. You can't get there because you need a passport to get from the College of Ag to the College of Fine Arts.

Summary

Chapter 4 describes the research findings, categories, and themes related to programs and processes that enhanced limited-resource farmers economic, environmental, and social outcomes through Extension education. Interviews, a focus group, and documents were analyzed and findings summarized to determine practices that enhance limited-resource farmers educational outcomes (see Table 6). The findings were generated through seven individual interviews with campus and county faculty using an 11-question interview guide with probing questions. Also, a focus group was conducted with nine farmers using a seven-question interview guide with probing questions. Documents were reviewed for consistency and differences compared to the interviews and focus group results. All participants shared their experiences with the NC A & T Extension programs.

The findings revealed that the FACT, Plasticulture, and Pastured-Raised Swine programs have helped enhance limited-resource farmers' economic, environmental, and social outcomes. In addition, the participants confirmed caring, trust, and relationship building as Extension faculty qualities that encourage their participation while irrelevant and poorly-timed programs do not. Furthermore, Extension personnel enhanced program success by involving farmers in program planning, advisory committees, and mentoring

other farmers. Additionally, participants indicated that NC A & T collaborates with North Carolina State, community-based organizations, and other government agencies to meet the needs of limited-resource farmers.

Chapter 5

Summary, Discussion, and Conclusions

Chapter 5 includes a summary, discussion, and conclusions for this qualitative research study. Also, presented are the implications for practice and recommendations for future research studies.

Purpose and Research Questions

This research study examined how the North Carolina A & T State University Extension program has helped limited-resource farmers enhance economic, environmental, and social outcomes through its 1890 Extension education program. This inquiry described educational collaborative efforts between North Carolina State University, other 1862 land-grant universities, community-based organizations, and government agencies providing nonformal education and services to limited-resource farmers. To accomplish this, the following research questions were explored about the North Carolina A & T Extension program:

1. How has the North Carolina A & T Extension program helped limited-resource farmers reach program outcomes?
2. What factors affect the North Carolina A & T Extension program's ability to help limited-resource farmers reach program outcomes?
3. How does the North Carolina A & T Extension program involve limited-resource farmers in determining their educational needs and related program outcomes?
4. How does the North Carolina A & T Extension program collaborate with 1862 Cooperative Extension, community-based organizations, and other agricultural agencies to help limited-resource farmers reach program outcomes?

Significance of the Study

Ninety-six years have passed since the passage of the Smith-Lever Act, which provided federal funds for the Cooperative Extension Service creating a formal relationship between the 1862 and 1890 Cooperative Extension programs. Mayberry (1991) reported the contributions of the 1890 land-grant universities to the education of limited-resource farmers from 1890 to 1990. There is little research on recent contributions of 1890 Extension programs for this audience. This study focused specifically on how the North Carolina A & T State University Extension program has helped limited-resource farmers reach program outcomes through agricultural Extension education. Furthermore, this study differs from prior research studies by exploring collaborative efforts between 1890 and 1862 land-grant universities, community-based organizations, and government agencies serving limited-resource farmers.

Summary of the Methodology

Individual interviews were conducted with seven Extension specialists, associate, county-based agents, and agricultural and natural resource technicians. The duration of each interview varied between 45 and 60 minutes depending on the participant's interest in sharing their experiences. All participants were asked the same questions and the researcher asked additional probing questions for deeper insight into the phenomenon.

A focus group was conducted with nine limited-resource farmers from four counties in eastern North Carolina. County-based faculty assisted the researcher in identifying farmers to participate in the focus groups. The duration of the focus group session was approximately 60 minutes. All participants were asked the same questions and the researcher asked probing questions for additional information.

For this study, the researcher reviewed Extension: (a) written impact stories (b) written success stories, (c) meeting agendas, and (d) *Solutions* (the NC A & T Extension program annual success stories publication from 2004-2010) to supplement data provided through interviews and the focus group.

Summary of the Research Findings

Research Question 1: Since 1990, how has the North Carolina A & T Extension program helped limited-resource farmers reach program outcomes?

According to Reisman and Clegg (1999), program participants must begin with the first step of the change process before the later steps can be achieved; however, the steps are not always linear. Farmers participating in the Farmers Adopting Computer Training (FACT), plasticulture, and pastured-swine production programs experienced the change process by gaining knowledge, learning new skills, and adapting new practices.

Outcome-based evaluation focuses on these key questions (Reisman & Clegg, 1999):

1. How has a program made a difference?
2. How are the lives of program participants better as a result of the program?

The FACT, plasticulture, and pastured-swine programs have made a difference in the farmers' lives and the farming business is better as a result of the program. A description of how these programs have made a difference and improved the lives of participants will follow.

The farmers learned basic keyboarding skills, word processing, spreadsheet, email and Internet use by participating in the FACT program. Also, the farmers applied the new learning by using the computer to maintain farm records, email agents and specialists, and develop signs to market produce and products. The FACT program improved the farming business by helping farmers maintain efficient records, improve federal and state

income tax returns, and reduce or eliminate accountant's fees. The findings indicate that farmers increased their net farm income by 10 to 15%.

Many of the farmers were able to communicate by email with specialists, agents, and project directors via email. Emailing is an effective alternative to traditional mail and because the specialists and agents can email fact sheets or brochures, that will help farmers in minutes instead of days. Additionally, farmers can use the Internet and email to communicate with each other, search for information on the Internet, and order supplies.

The plasticulture program helped farmers reach produce markets earlier than traditional or bare ground production. Also, the plasticulture program reduced the amount of herbicides and fertilizer used on the crops. Farmers participating in the program increased their net farm income because the growing, harvesting, and marketing season was extended. Consumers are willing to pay a higher price for vegetables produced with less herbicides and manmade fertilizer. The plasticulture program helps farmers achieve these two goals because the plastic suppresses weeds and fertilizer is applied directly to the root zone.

The pastured-swine program created a niche market for small farmers because consumers are demanding natural and antibiotic-free meat. Most grocery chains have created space for natural and antibiotic-free meat. All of the farmers participating in the pastured-swine program can market their pork to Whole Foods and upscale restaurants. Farmers received a premium price for natural and antibiotic-free pork.

The pastured-swine program improves the environment because the swine waste can be used as fertilizer. Furthermore, the farmers save money because their fertilizer

cost are reduced and sometimes eliminated. Waterway pollution is reduced because less waste is being produced since waste is applied to the land as natural fertilizer.

Farmers who adopted environmentally-friendly practices from the plasticulture and pastured-swine production programs increased the prices they received for their produce and products, which could lead to business sustainability. These findings support prior research by Cervero and Wilson (2006), who reported that educational outcomes involve change in the participants' knowledge and the use of that knowledge to improve their present situation and the community.

Findings from this research study support four of the six assumptions of Knowles' andragogical model: (a) the need to know, (b) readiness to learn, (c) orientation to learning, and (d) motivation (Knowles, Holton, & Swanson, 2005). The farmers were interested in and understood the benefits of participating in the programs (e.g., farmers understood the computer would improve their farm record keeping). This comment supports the need to know assumption. The FACT program taught farmers basic computer skills (e.g. keyboarding) before advancing to higher level task (e.g., Excel spreadsheet application and record keeping). This comment supports the readiness to learn assumption.

Also, FACT helped farmers maintain records and communicate with agents and specialists. Adult learners are more likely to participate in educational programs when the learning is directly related to their present situation (Knowles, Holton, & Swanson, 2005). This statement supports the orientation to learning assumption. In this case, limited-resource farmers are searching for alternative enterprises to increase net farm income and improve environmental practices. Those participating in the plasticulture and

pastured-swine production programs realized these outcomes. This statement supports the motivation assumption.

Research Question 2: What factors affect the North Carolina A & T Extension program's ability to help limited-resource farmers reach program outcomes?

Faculty indicated that caring about farmers and understanding needs, establishing trust, and building a relationship were qualities of Extension faculty that influence farmers to participate in Extension programs. Findings from this study support the work of Tubene, White, and Rose (2005), who discovered that building relationships and trust are crucial to meeting the educational needs of limited-resource farmers. The findings support the work of Reisman and Clegg (1999), who reported that program connections are established by building trust with staff, family, friends, and neighbors.

Participants mentioned the one-on-one approach is an effective method to reach limited-resource farmers; however, other methods were not discussed. Findings from this study confirm those of Tubene, White, and Rose (2005), that individual farm visits, on-farm focus groups, hands-on workshops, and networking events were effective methods to reach limited-resource farmers. Participants in this study did not discuss the instructional methods presented above and this research study did not address specific instructional methods.

Participants stated that Extension staff should understand limited-resource farmers' needs and issues to be effective. This finding supports prior research from Tubene and Holder (2001) who reported Extension professionals must understand limited-resource farmers' needs and struggles and design programs to address them.

Extension faculty members indicated that farmers' full-time employment and programs that do not address limited-resource needs are factors that prevent farmers' participation in Extension programs. However, the farmers in this study did not discuss employment and programs that do not address their needs. This statement of the Extension faculty supports Tubene and Holder (2001), who reported that many limited-resource farmers work full-time or part-time jobs to supplement farm income.

Research Question 3: How does NC A & T Extension program involve limited-resource farmers in determining their educational needs and related outcome?

Farmers indicated meeting with Extension faculty to share program ideas and develop programs to address limited-resource farmers' needs. All agents and technicians used advisory or specialized committees to develop programs. All of the limited-resource farmers in this study participated in state or local advisory or specialized committees. This statement supports Patton (2001), who discussed that program participants should determine program outcomes.

Participants were involved in writing down program ideas, prioritizing the list, selecting the best ideas, and helping develop programs. This supports the work of Caffarella (2002), who discussed the importance of sorting and prioritizing program ideas for good program planning. Also, this supports the findings of Boone, Safrit, & Jones (2002), who discussed the need to reach consensus about the focus of adult education organization's planned program.

Farmers discussed attending meetings regarding local farmers' market issues and developing a plan of action to resolve the issues. To address limited-resource farmers' needs, farmers should participate in program planning. Farmers cannot have input or

change ineffective programs unless they are deeply involved in the planning. This statement is related to the power dynamic in program planning. According to Cervero and Wilson (2006, p. 85), power is defined as a capacity to act and power relations define who is represented at the planning table and who makes decisions about programs. According to Cervero and Wilson, ethical commitment protects the interests of the targeted audience instead of allowing just the people with greater power to determine the features of the program. Findings from this study revealed agents and technicians do this by using advisory committees or councils consisting of farmers and business people to gather ideas and plan programs.

Participants indicated helping other farmers lay plastic, assisting other farmers in computer classes, and learning about farming issues from each other. This statement supports prior research by Knowles, Holton, & Swanson (2005), who reported adults are willing to share their experiences with others if given the opportunity. Consequently, many adults enjoy learning from each other by sharing their diverse experiences.

Findings from this research study suggest that farmers establish on-farm demonstrations to supplement discussion and educate other limited-resource farmers. This statement supports two assumptions of the andragogical model: the learners' self-concept and the role of the learners' experience (Knowles, Holton, & Swanson, 2005).
Research Question 4: How does the NC A & T Extension program collaborate with the 1862 Cooperative Extension, community-based organizations, and other agricultural agencies to help limited-resource farmers reach program outcomes?

Findings from this research study revealed that NC A & T Extension program collaborates with North Carolina State University, community-based organizations, and

other agricultural agencies to plan and implement educational programs that address limited-resource farmers' educational needs. In addition to programming, all of these organizations collaborate to provide technical assistance to limited-resource farmers. This statement confirms Newman's (1994) research. He reported consultation involves two or more parties whose common interest outweighs their differences. According to Newman (1994), all parties work together sharing information and solving problems in a mutually supportive manner. Furthermore, this practice supports Cervero and Wilson's (2006) theory that indicated the amount of power each individual brings to the consultation is irrelevant. This statement confirms the W. K. Kellogg Foundation's (1998) findings that community-level outcomes include a variety of agencies and disciplines. To achieve a common goal, all partners must engage together in community planning and priority-setting. This statement supports Reisman and Clegg (1999), who reported system-level outcomes include multiple agencies working together in one field to reach a common goal not achievable without collaboration.

Discussion

This research study focused specifically on how the North Carolina A & T State University Extension program helps limited-resource farmers reach program outcomes through Extension education. This research study reveals that the NC A & T Extension program has helped limited-resource farmers reach program outcomes.

The FACT, plasticulture, and pastured-swine production programs were discussed in the majority of the individual interviews with Extension faculty and the focus group with limited-resource farmers. The farmers participating in these programs gained new knowledge regarding technology and production practices that would directly impact

their farming operation. All farmers, regardless of the size of their operation, encountered financial problems. Extension can help by planning and implementing educational programs that address farmers' needs.

Many agricultural agencies and financial institutions require farmers to complete online applications for cost share programs and loans. Farmers who participated in the FACT program gained essential skills (e.g., Internet, keyboarding, and word processing) that would help them complete online applications. To qualify for loans from Farm Service Agency and financial institutions, farmers need farm and personal financial records. Farmers can prepare their own farm and personal records by using Excel. If the farmers need assistance, Extension agents and technicians are available to help. This did result in increased financial support and success for limited-resource farmers.

Farmers are searching for marketing methods that eliminate middlemen and increase farm profits. Direct marketing enables the farmers to sell directly to customers (e.g., farmers' market, community supported agriculture, websites, local schools, restaurants, and grocery stores). All of the farmers participating in this research study developed websites to market their produce and better connect with customers that did lead to increased incomes.

The Plasticulture program was designed to help farmers change from row crops (e.g., corn, cotton, soybeans, and tobacco) to fruit and vegetable production as a viable alternative to traditional row crops. Farmers can diversify their farming operation by adding fruits and vegetables to the production plan. All of the farmers participating in this study used plastic mulch to raise fruit and vegetables. The Plasticulture program

helped farmers enter the produce market earlier than their counterparts planting on bare ground. The results were more produce and increased profits.

To compete and remain viable, limited-resource farmers should consider niche markets or alternative methods to produce and sell agricultural products. The Pastured-Swine production program helped farmers produce swine naturally without antibiotics or growth hormones. Subsequently, Whole Foods, a local grocery chain marketing natural products, was willing to purchase the pork from the farmers participating in the Pastured-Swine Production program.

To address farmers' educational needs, Extension should receive input from program participants and stakeholders at the grassroots level. The agents and technicians participating in this research study used advisory committees or councils to assist with program planning. Three different program planning models were discussed in Chapter 2: Program Planning Theory, the Conceptual Programming Model, and the Interactive Model of Program Planning. All three models address involving program participants in program planning or design, implementation, and evaluation. In this research study, the farmers generated program ideas; however, there was little data to support farmers' involvement in program implementation and evaluation. The outcome-based evaluation model discussed the value of involving participants and partners in determining program outcomes.

It was evident that Extension agents and technicians used advisory or specialized committees to plan educational programs. However, there was little evidence to support that Extension agents and technicians use or are aware of formal program planning models (e.g., Program Planning Theory, the Conceptual Programming Model, or the

Interactive Model) to plan educational programs. By using a program planning model, Extension agents and technicians would have an outline to follow to ensure that program planning, implementation, and evaluation are being fully and appropriately addressed.

There is extreme pressure on organizations receiving federal and state funding to demonstrate accountability. Extension is competing with social security, Medicare and Medicaid, homeland security, and education for funding. It is imperative that Extension professionals evaluate their educational programs to determine if the program outcomes are being achieved. The 1890 Extension Program should allocate more resources to evaluate programs because they rely heavily on federal funding to support their programming efforts. If federal funding is significantly reduced, the 1890 Extension Program may cease to exist. Many limited-resource farmers and families would be negatively impacted by the loss of the 1890 Extension Program.

The 1890 Extension program provides leadership for small and limited-resource farmers via educational programs and technical assistance. The 1890 Extension program faculty possess many qualities and talents that can help improve the sustainability of limited-resource farmers; however, assistance is needed from the 1862 land-grant universities, other agricultural agencies, and community-based organizations because each organization has specific strengths. It was evident that the NC A & T Extension program collaborates with NCSU, other agricultural agencies, and community-based organization to strengthen educational programs for limited-resource farmers. The farmers benefit from this collaborative effort because they understand and access the resources each partner can provide.

Overall, the comments were favorable about the relationship between the

NC A & T Extension Program and the NC State Cooperative Extension Service. One faculty member discussed that NC State does not fully understand the NC A & T Extension Program. These two universities have been in existence since 1887 and 1891 respectively. To effectively understand the role each Extension Program and Extension Service plays, they must be willing to meet, share their programs and the programs' impact and advocate for each other.

Another faculty member thought the NC State Extension agents ignored African American farmers and referred those farmers to the African American Extension agents. Fifty-six years have passed since Brown versus Board of Education passed, ruling segregation unconstitutional (Mayberry, 1991). Public universities and Extension receive federal funding to provide educational programs and services to all citizens regardless of ethnicity, gender, or socioeconomic status. All organizations should implement diversity or cultural awareness educational programs to eliminate or reduce discrimination in the workplace.

Implications

This research study gave Extension faculty and limited-resource farmers the opportunity to voice their ideas of how the NC A & T Extension program helps limited-resource farmers reach program outcomes through Extension education. The data suggest the following improvements and changes for the NC A & T Extension program:

- Involve limited-resource farmers in program implementation and evaluation.

Farmers are more likely to support and recruit other farmers to participate if they are actively involved in program planning, implementation, and evaluation. Also,

the farmers live and work in communities and have developed lasting relationships with other farmers who may not participate in Extension programs.

- Provide training for Extension faculty on program planning models.
Program planning models provide organization and structure for Extension faculty to plan, implement, and evaluate educational production. Program planning models help Extension faculty to plan programs that effectively address farmers' educational needs. Small and limited-resource farmers are increasing in population and Extension must develop innovative programs to address their diverse needs.
- Use the outcome-based evaluation approach to evaluate educational programs.
The logic model provides the foundation for outcome-based evaluation and consists of three components: inputs, outputs, and outcomes. The outcome-based evaluation approach is used in Extension to provide accountability, improve program quality, allocate resources, and market successful programs. It is imperative that the 1890 Extension program demonstrate program impact to continue receiving federal and state funding.
- Continue the FACT, Plasticulture, and Pastured-Swine Production programs.
These three programs have helped limited-resource farmers reach economic, environmental, and social outcomes. All programs increased farmers' net farm income and improved sustainable agricultural practices, and the FACT program helped farmers communicate via email. Additionally, the farmers developed web pages to help promote their farming business and market produce and products.

- Collaborate with NCSU, other 1862 land-grant universities, community-based organizations, and other agricultural agencies in developing programs for limited-resource farmers. By working together, organizations build on each other's expertise and talents. Also, organizations can share their educational programs and services with each other. Limited funding can be extended if organizations work together to achieve a common goal. Underserved and underrepresented clientele will have an opportunity to learn about educational programs and services provided by NC State, other 1862 land-grant universities, community-based organizations, and other agricultural agencies. Both universities can apply for grants to develop educational programs to enhance limited-resource farmers' economic, environmental, and social outcomes (e.g., Plasticulture and Pastured-Swine Programs). Additionally, they can sponsor a booth at the North Carolina State Fair highlighting successful programs for farmers, families, youth, and the community.
- Educate other schools and colleges at NC A & T (e.g., nursing, business, and technology) about Extension programs. Many students and faculty members at land-grant universities do not understand the mission of a land-grant university or Extension. Extension can participate in university open houses and develop a program that demonstrates Extension's contributions to the university and North Carolina.
- Develop joint programs with other schools and colleges at NC A & T State University. Most 1890 Extension faculty and staff are not part of an academic department. Extension can build on other departments' expertise and talents to

develop quality educational programs that have a greater impact on North Carolina citizens.

- Increase participation in research studies. To increase participation in future research studies, the researcher suggest using multiple methods to gather valuable data (e.g. face-to-face interview, telephone interviews, focus groups, surveys with closed and open-ended questions, and information technology).

Future Research

This study would have benefited by involving more than one 1890 Extension program. The researcher would have been able to compare how other 1890 Extension programs help limited-resource farmers reach program outcomes through Extension education. Furthermore, I believe this study would have benefited by interviewing individual farmers rather than including them in a focus group. Some of the farmers would have been more willing to share their experiences in personal interviews than in a focus group. The research could have utilized more probing questions to gain deeper insight into the phenomenon of programs that enhance limited-resource farmers' economic, environmental, and social outcomes.

Future research studies could use limited-resource farmers from different geographical regions in the state to compare and contrast findings. Programs that enhanced limited-resource farmers' economic, environmental, and social outcomes in one geographical region may not address needs in other regions of the state. Farmers from different geographical regions have different issues and educational needs. For example, farmers in eastern North Carolina are concerned with swine waste polluting coastal waterways; however, swine production is nonexistent in western North Carolina.

Farmers in western North Carolina are concerned with preventing insects in Christmas trees; conversely Christmas trees are not grown commercially in eastern North Carolina.

Additionally, case study methodology could be utilized to immerse the researcher in the farmers' daily lives. The case study would provide detailed insight into the phenomenon of programs that enhance limited-resource farmers economic, environmental, and social outcomes.

There have been some research studies that have addressed the topic of meeting the needs of women farmers. Future research could address Extension programs that enhance economic, environmental, and social outcomes for limited-resource women farmers. This study could be improved by comparing and contrasting findings for male and female limited-resource farmers.

Summary

The NC A & T Extension Program is delivering outcome-based educational programs for limited-resource farmers. The Extension faculty has established trusting relationships with the farmers, which increase participation in programs and the number of farmers adopting new technology and practices. The FACT, Plasticulture, and Pastured-Swine Production programs helped farmers enhance their economic, environmental, and social outcomes. The NC A & T Extension Program has developed a good record of working with limited-resource farmers due to these programs. Furthermore, the NC A & T Extension Program must continue to strive to work cooperatively with farmers to develop innovative and cutting-edge programs to improve limited-resource farmers' lives.

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Appendix A
Recruitment of Extension Faculty Letter

Dear North Carolina A & T State University Extension Faculty Member:

I am Johnnie Westbrook, a graduate student at Virginia Tech in the Department of Agricultural and Extension Education. I am conducting my PhD dissertation on helping limited-resource farmers reaching economic, environmental, and social outcomes through Extension education.

The 1890 Extension program provides educational programs to limited-resource audiences including farmers, families, and youth. To continue providing educational programs, Extension professionals should evaluate existing programs to determine if the clientele needs are being addressed.

This research study will examine how the North Carolina A & T State University Cooperative Extension program has helped limited-resource farmers enhance economic, environmental, and social outcomes through its 1890 Extension education program. This inquiry will also describe educational collaborative efforts between North Carolina State University, other 1862 land-grant universities, community-based organizations, and government agencies providing nonformal education and services to limited-resource farmers.

You were selected to participate in this study because you met the following criteria: (a) knowledge regarding programs that help farmers reach program outcomes through education (b) knowledge regarding program components and concepts that impact Extension's ability to help limited-resource farmers reach program outcomes through education, (c) experience involving farmers in needs assessment and program planning, and (d) experience collaborating with the 1862 Cooperative Extension Service, agricultural agencies, and community-based organizations.

I will use individual interviews to collect data. Names will not be associated with the study. Your participation in this study is voluntary and you may withdraw from the study at any time.

Your participation in this study is greatly appreciated and will contribute to our understanding of how Extension programs enhance economic, environmental, and social outcomes for limited-resource farmers. If you are willing to participate in this study, please confirm by signing the enclosed consent form. Please mail the consent form to Johnnie Westbrook, 981 Hwy 109 South, Mt. Gilead, NC 27306. If you have any questions concerning this study, please feel free to call Johnnie Westbrook at (910) 975-2263, or my academic advisors, Nancy Franz at (540) 231-1634, or Daisy Stewart at (540) 231-8180. Again I would like to thank you in advance for your time and cooperation.

Sincerely,
Johnnie R. Westbrook,

Appendix B
Virginia Polytechnic Institute and State University
Informed Consent for Participants
In Research Projects Involving Human Subjects

Title of Project: Enhancing Limited-Resource Farmers Economic, Environmental, and Social Outcomes Through Extension Education

Investigators: Johnnie Westbrook, Graduate Research Assistant
Doctoral Candidate, School of Education, Virginia Tech

Advisors: Dr. Nancy Franz and Dr. Daisy Stewart

Purpose of Research

This research study will examine how the North Carolina A & T State University Cooperative Extension program has helped limited-resource farmers enhance economic, environmental, and social outcomes through its 1890 Extension education program. This inquiry will also describe educational collaborative efforts between North Carolina State University, other 1862 land-grant universities, community based organizations, and government agencies providing nonformal education and services to limited-resource farmers.

Procedures

Individual interviews will be conducted with an Extension administrator, specialists, associates, agents, and technicians. The duration of each interview will vary between 45 and 60 minutes depending on the participant's interest in sharing their experiences. The interviewee will select a location for the interview that is conducive to sharing experiences and audio recording.

Focus groups will be conducted with limited-resource farmers. All interviews and focus groups will be audio recorded. The duration of the focus group will vary between 90 and 120 minutes depending on participants' interest in sharing their experience. Focus group sessions will be conducted at the Cooperative Extension office.

The researcher will review the following documents: (a) impact stories, (b) success stories, (c) program evaluations, (d) conference proceedings, (e) unpublished journal articles, and (f) peer reviewed journal articles.

Risks

The risks are minimal since participant names or other identifying information will not be used in any documents.

Extent of Anonymity and Confidentiality

Pseudonyms will be used instead of the participants' name. The researcher will use the following pseudonyms for the participants: Extension administrator, specialists, and associates (C:1, C: campus-based, and 1: first interview), Extension agents and technicians (FF:1, FF: field faculty, and 1: participant number), and limited-resource farmers (1:1, 1: first focus group and 1: participant number).

The audio tapes will be transcribed by the graduate student and stored in a locked, fire-proofed security chest. The principal investigators and co-principal investigator will have access to the audio tapes and transcripts. All audio tapes and transcripts will be destroyed in seven years.

It is possible the Institutional Review Board (IRB) may view this study's collected data for auditing purposes. The IRB is responsible for the oversight of the protection of human subjects involved in research.

Compensation

There is no compensation for participating in this study.

Freedom to Withdraw

There is no penalty if you decide to withdraw from participating in this study. If you decide to give me permission today, and then decide to withdraw at a later date, you must let me know. My phone number is (910) 975-2263 or johnniewestbrook@yahoo.com. If you do not want to talk to me about the research study, you may contact Dr. Nancy Franz at (540) 231-1634 or nfranz@vt.edu or Dr. Daisy Stewart at (540) 231-8180 or daisys@vt.edu. You may also contact Dr. David Moore, the Chair of the Virginia Tech IRB at (540) 231-4991 or moored@vt.edu if you have questions about your rights as participant in this project.

Subject's Permission

I have read the Consent Form and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent:

Subject signature _____ Date _____

Appendix C



Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24061
540/231-4991 Fax 540/231-0959
e-mail moored@vt.edu
www.irb.vt.edu
FWA00000572(expires 1/20/2010)
IRB # is IRB00000967

DATE: November 2, 2009

MEMORANDUM

TO: Nancy Franz
Johnnie Westbrook
Daisy L. Stewart

Approval date: 10/20/2009
Continuing Review Due Date: 10/5/2010
Expiration Date: 10/19/2010

FROM: David M. Moore 

SUBJECT: **IRB Amendment 1 Approval:** "Enhancing Limited-Resource Farmers' Economic, Environmental, and Social Outcomes through Extension Education", IRB # 09-857

This memo is regarding the above referenced protocol which was previously granted approval by the IRB on October 20, 2009. You subsequently requested permission to amend your IRB application. Since the requested amendment is nonsubstantive in nature, I, as Chair of the Virginia Tech Institutional Review Board, have granted approval for requested protocol amendment, effective as of November 2, 2009. The anniversary date will remain the same as the original approval date.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

cc: File

Invent the Future

VIRGINIA POLYTECHNIC INSTITUTE UNIVERSITY AND STATE UNIVERSITY
An equal opportunity, affirmative action institution

Appendix D
Interview Questions:
For Specialists, Associate, Agents, and Technicians

Date: _____ Time Begin: _____ Time
End: _____

Name: _____

Location: _____

Title: _____

Introduction:

I am Johnnie Westbrook, a graduate student at Virginia Tech in the Department of Agricultural and Extension Education. I am conducting my PhD dissertation research on Extension programs that have enhanced economic, environmental, and social program outcomes for limited-resource farmers. I am interested in learning what farmers do differently after participating in Extension programs.

- Ask if they have questions about the research study.
- Explain that research participation is voluntary and they may withdraw from the study at any time without penalty
- Discuss confidentiality issues.
 - Their names will not be associated with specific comments unless they give permission to do so.
 - Interview transcripts will be jointly edited by the researcher and interviewee before being shared with others.
- Ask for permission to record the interview, take notes, and publish the results.

1. Please describe your role within the North Carolina A & T Cooperative Extension Program?

A. How long have you been employed with North Carolina the A & T Cooperative Extension Program?

B. Have you held other positions within Cooperative Extension (North Carolina A & T or other universities)? If so, what?

2. What Extension programs have you been part of that helped limited-resource farmers reach economic, social, and environmental outcomes?

3. What did farmers do differently as a result of participating in the program?

- A. Connections or networking
- B. Stabilization-e.g. Farm Income
- C. Attitudes
- D. Perceptions or feelings
- E. Knowledge
- F. Skills

- G. Behavior
 - H. Conditions-changes for farmers
 - I. Policies
 - J. Other suggestions
4. **What qualities and characteristics does the North Carolina A & T Extension Program possess that helps farmers reach program outcomes?**
 - A. Trustworthiness of agency providing educational programs
 - B. Adult education experience
 - C. Adult education programming models
 - D. Collaboration/partnerships
 - E. Understand farming operations
 - F. Build and establish relationships
 - G. Involve farmers in program planning
 - H. Diverse agricultural knowledge
 - I. People skills
 - J. Caring
 5. **What factors exist that affect nonformal education of limited-resource farmers?**
 - A. Trustworthiness of agency providing educational programs
 - B. Literacy level of farmers
 - C. Identifying and locating limited-resource farmers
 - D. Networking with community-based organizations and other agricultural agencies
 - E. Knowledge of adult education principles and adult education programming models
 - F. Personnel
 6. **How are limited-resource farmers involved in program planning, implementation, and evaluation?**
 7. **How are other stakeholders involved in program planning, implementation, and evaluation?**
 8. **Please describe the working relationship between North Carolina A & T and the 1862 Extension Service to serve limited-resource farmers.**
 - A) Formal or informal memorandum of understanding
 - B) Vision
 - C) Goals and specific objectives
 - D) Joint work
 - E) Agent collaboration
 9. **How can the working relationship be improved between North Carolina A & T and the 1862 Extension Service to serve limited-resource farmers?**
 10. **How does the North Carolina A & T Extension Program work with community-based organizations and agricultural agencies to help limited-resource farmers reach program outcomes through education?**
 - A) Sponsoring educational programs
 - B) Recruiting limited-resource farmers
 - C) Program planning, implementation, and evaluation

11. What other comments do you have that relate to North Carolina A & T Cooperative Extension Program for limited-resource farmers?

Appendix E
Focus Group Questions:
For Limited-Resource Farmers

Date: _____ Time Begin: _____ Time
End: _____

Location: _____

Introduction:

I'm Johnnie Westbrook, a graduate student at Virginia Tech in the Department of Agricultural and Extension Education. I am conducting my PhD dissertation research on Extension programs that have enhanced economic, environmental, and social program outcomes for limited-resource farmers. I am interested in learning what farmers do differently after participating in Extension programs.

- Ask if they have questions about the research study.
- Explain that research participation is voluntary and they may withdraw from the study at any time without penalty
- Discuss confidentiality issues.
 - Their names will not be associated with specific comments unless they give permission to do so.
 - Focus group transcripts will be jointly edited by the researcher and interviewee before being shared with others.
- Ask for permission to record the focus group, take notes, and publish the results.

1. Please describe your farming experience and operation.

- A. Years of farming experience
- B. Type of operation
- C. How long have you been involved with the NCAT Extension Program

2. What Extension programs have you participated in that helped improve your operation? (Programs sponsored by North Carolina A & T)

- A. Farmers Adopting Computer Training (FACT)
- B. Pastured Swine and Poultry
- C. Meat Goats
- D. Marketing
- E. Black Plastic Fruit & Vegetable Production
- F. Direct Marketing
- G. ATV Safety
- H. Farm Mentoring
- I. Shiitake Mushrooms
- J. Ways To Grow

3. What changes did you make after participating in the program?

- A. Connections or networking

- B. Stabilization
 - C. Attitudes
 - D. Perceptions/feelings
 - E. Knowledge
 - F. Skills
 - G. Behavior-how you operate your farm
 - H. Condition-help you or other farmers remain in business
 - I. Policies
 - J. Communities and families
4. **What qualities and characteristics do the Extension faculty possess that encourage you to participate in programs?**
 - A. Trustworthiness-agent and specialist
 - B. Understanding your farming operation
 - C. Build relationships
 - D. Develop programs that address your needs
 - E. Involve you in program development
 - F. Agricultural knowledge
 - G. People skills
 - H. Caring
 5. **How does Extension involve you in planning educational programs?**
 - A. Recruiting farmers
 - B. Advisory committee member
 - C. Needs assessment
 - D. Program planning
 - E. Program implementation
 - F. Program evaluation
 - G. Farm demonstration
 6. **How can the North Carolina A & T Extension Program collaborate with North Carolina State University, other universities and community-based organizations, and other agricultural agencies to provide education for limited-resource farmers?**
 - A. Sponsor educational programs
 - B. Recruiting farmers
 7. **Are there any other information or comments you would like to share related to Extension programming?**

Appendix F

Recruitment of Limited-Resource Farmers

Dear Limited-Resource Farmer:

I am Johnnie Westbrook, a graduate student at Virginia Tech in the Department of Agricultural and Extension Education. I am conducting my PhD dissertation research on helping limited-resource farmers reach economic, environmental, and social outcomes through Extension education.

Limited-resource farmers are faced with barriers to success and sustainability such as low net farm income, limited capital, less acreage, and less formal education than operators of large farms. In order for limited-resource farmers to survive and remain competitive, they often participate in educational programs sponsored by the North Carolina A & T Cooperative Extension program.

This research study will examine how the North Carolina A & T State University Cooperative Extension program has helped limited-resource farmers enhance economic, environmental, and social outcomes through its 1890 Extension education program. This inquiry will also describe educational collaborative efforts between North Carolina State University, other 1862 land-grant universities, community-based organizations, and government agencies providing nonformal education and services to limited-resource farmers.

You were selected to participate in this study because you met the following criteria: (a) a limited-resource farmer, (b) participated in 1890 Extension programs, (c) knowledge about how Extension programs are planned and implemented, and (d) implemented agricultural practices introduced by Extension.

The researcher will use focus groups to collect data. Names will not be associated with the study. Your participation in this study is voluntary and you may withdraw from the study at any time.

Your participation in this study is greatly appreciated and will contribute to our understanding of how Extension programs enhance economic, environmental, and social outcomes. If you are willing to participate in this study, please confirm by signing the enclosed consent form. Please mail the consent form to Johnnie Westbrook, 981 Hwy 109 South, Mt. Gilead, NC 27306. If you have any questions concerning this study, please feel free to call Johnnie Westbrook at (910) 975-2263, or my academic advisors Nancy Franz at (540) 231-1634 or Daisy Stewart (540) 231-8180. Again we would like to thank you in advance for your time and cooperation.

Sincerely,
Johnnie R. Westbrook

Appendix G
Permission to use the Steps in the Change Process Email

RE: Permission to use table

Page 1 of 1

RE: Permission to use table

Heidi Brown [hbrown@organizationalresearch.com]

Sent: Wednesday, September 08, 2010 1:42 PM

To: Johnnie R. Westbrook

Hi, Johnnie--

I'm writing on behalf of Jane Reisman and she has agreed for you to use the table in your dissertation. Please use a citation when you do so.

Good luck with your dissertation!

-Heidi

Heidi Brown
Organizational Research Services
1100 Olive Way, Suite 1500
Seattle, WA 98101
206.728.0474 x221
FAX: 206.728.8984
www.organizationalresearch.com

-----Original Message-----
From: Johnnie R. Westbrook [<mailto:jwestbrook@alcorn.edu>]
Sent: Wednesday, September 08, 2010 10:57 AM
To: tef@evaluationforum.com
Subject: Permission to use table

My name is Johnnie Westbrook and I'm a doctoral student in Career and Technical Education at Virginia Tech. I am requesting permission to use the Steps in the Change Process Table on p. 17 in the Outcomes for Success (2000 edition) in my dissertation. Please forward the email to the appropriate person or provide contact information for me to forward my request. Your timely response and assistance are greatly appreciated.

The complete reference is Reisman, J. & Clegg, J. (1999). Outcomes for success. Seattle, WA: The Evaluation Forum.

Johnnie R. Westbrook,
Extension Associate, Accountability & Reporting
Alcorn State University
1000 ASU Dr. #479
Alcorn State, MS 39096-7500
(P) 601-877-6714
(F) 601-877-6694
jwestbrook@alcorn.edu

<https://email.alcorn.edu/owa/?ac=Item&t=IPM.Note&id=RgAAAAATJZnw...> 9/8/2010