

# 2007 North Carolina A&T State University Research Plan of Work

## Brief Summary about Plan of Work

This document outlines the 5-Year Plan of Work for FY2007-FY2011 of North Carolina Agricultural and Technical State University (NCA&T). The plan is organized around the five national goals of the Cooperative State Research, Education, and Extension Service (CSREES/USDA) and delineates efforts to address the key agricultural issues in North Carolina.

Overall, the issues driving this 5-Year Plan of Work are listed below:

- Increasing health, nutrition and obesity concerns of North Carolina residents
- Increasing cost of conventional energy resources emphasizing the need to develop renewable energy, bio-energy and bio-based products
- Challenges in water quality and water quantity in the state
- Demands for the use of biotechnology and biosciences to develop new or improved food and agriculturally related products

Changes in rural economies and communities (economically stressed communities need research-based leadership training, database development to support community issues, and opportunities for entrepreneurship)

Movement away from tobacco as the primary cash crop to viable sustaining alternatives (continuing decline of tobacco and the need for profitable alternative crops and efficient production methods)

Changes in the population composition and workforce participants (increases in Hispanics in rural areas and among the agricultural workforce has produced an increasing need and demand for population relevant information on health status and quality of life.)

Increased recognition of the value and benefits of alternative medicine (nutraceuticals and functional foods as medical alternatives)

The following strategies permeate the 5-Year Plan of Work and have been refined and expanded to address the agricultural issues in North Carolina:

1. Increased interaction between research and Extension. The School of Agriculture and Environmental Sciences (SAES) has implemented a strategic plan to enhance collaboration between research and Extension. This collaboration is essential to assure involvement of Extension in not only clarifying agricultural issues but also in being a partner for the delivery and use of information on completion of the research project. Specific strategies to achieve this include a required Extension component/collaboration in all Evans-Allen proposals and split appointments between research and Extension.
2. Expanded partnerships and leveraging of research funds. The School of Agriculture and Environmental Sciences actively pursues collaborative relationships with industry and national and community agencies, and other institutions of higher learning to ensure maximum impact of its research projects in terms of both application of findings and attraction of funding to support the growth and viability of the research program.
3. Selection of six program initiatives. The School of Agriculture and Environmental Sciences is developing a signature research, teaching and cooperative extension program reflected in six broad-based program initiatives. The six program initiatives are: (1) Human and Community Development, (2) Biotechnology and Biodiversity, (3) Agromedicine, Nutrition and Food Safety, (4) Soil and Water Quality, (5) Small Scale Agriculture, and (6) International Trade and Development. These initiatives build on the strengths in the School and Environmental Sciences and align with the five CSREES goals. The Initiatives also support the primary themes of the vision of NC A&T State University. Specifically, 2-Year Plan of Work supports the key themes of interdisciplinary programs and centers, strategic partnerships, and enhanced diversified resources.

**Estimated number of professional FTEs/SYs to be budgeted for this plan.**

Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	12.0
2008	0.0	0.0	0.0	13.5
2009	0.0	0.0	0.0	15.0
2010	0.0	0.0	0.0	16.5
2011	0.0	0.0	0.0	17.0

**Merit Review Process**

**The merit review process that will be employed during the 5-Year Plan of Work cycle**

- Combined External and Internal University External Non-University Panel

**Brief explanation**

The research director has the primary responsibility for determining the need, priority, and scientific feasibility of the projects proposed and has a procedure for project documentation, merit review, and selection. This procedure assures that the research project proposals are scientifically sound, relevant to society's food and agricultural needs, and not duplicative of efforts undertaken elsewhere. Prior to proposal development, alignment of the topic with the needs of the state and the direction of the six program initiatives in the School of Agriculture and Environmental Sciences is determined. Upon agreement by the department chair, the associate dean for research, and the research director, the principal investigator prepares a proposal on the topic for submission through the Evans-Allen program. The Merit Review Process includes a review by five peer reviewers composed of persons both within and outside the university who are knowledgeable in or familiar with the area of research. The principal investigator is responsible for incorporating suggestions made by the reviewers and must give reasons for any substantive suggestions not included or addressed. The proposal is then reviewed by the associate dean for research who determines if additional review and substantive revision is necessary. Upon acceptance by the associate dean for research and the research director, the proposal is submitted for budgetary review by the Office of Agricultural Research and then transmitted to CSREES/USDA for approval.

**Evaluation of Multis & Joint Activities**

**1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?**

The Agricultural Research Program (ARP) in the School of Agriculture and Environmental Sciences (SAES) at North Carolina Agricultural and Technical State University routinely seeks feedback from agriculturally related stakeholders through a variety of formal and informal interactions and planned activities. These contacts involve all administrative levels within the SAES including administrators, researchers, staff, and students. The stakeholders include agriculturally-related industries, agencies, community groups, and county residents. The format for these activities involve service on many boards and commissions and listening sessions held across the state. Also, the SAES has a Corporate Advisory Board and a community advisory board (Strategic Planning Council).

The decision regarding involvement of SAES research scientists in multistate, multi-institutional and integrated activities is based on whether the involvement will address the identified issues and needs in North Carolina.

**2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?**

Addressing the needs of the under-served community is a key component in the mission of the Agricultural Research Program and the university at large. By maintaining open dialogue with stakeholders, scientists and faculty representatives are able to address the needs of the under-served communities of the state of North Carolina. Additionally, persons representing under-served and under-represented individuals and communities serve on the Strategic Planning Council.

### 3. How will the planned programs describe the expected outcomes and impacts?

The outputs and outcomes of multistate, multi-institutional, multidisciplinary and integrated activities that are related to components addressed by NCA&T are described in the annual report submitted by the Agricultural Research Program to the SAES Dean and in the annual report of accomplishments to CSREES/USDA.

### 4. How will the planned programs result in improved program effectiveness and/or efficiency?

The involvement of SAES research scientists in multistate, multi-institutional, multidisciplinary and integrated activities assists in improving program effectiveness in that combining efforts, especially with Extension, provides the opportunity to take the research knowledge back to the intended audiences. This enhances our potential for program impact. In terms of improving efficiency, the work load is shared among the persons involved in the collaboration, which generally improves the efficiency of collecting data, developing usable outputs, and bringing about program improvement.

## Stakeholder Input

### 1. Actions taken to seek stakeholder input that encourages their participation (Check all that apply)

- Targeted invitation to traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals

#### Brief explanation.

In addition to the formal meetings involving ARP administrators and stakeholders, the program conducts several annual outreach activities as a means for gathering input from those affected by the school's research activities or who use the research results. One major event is Small Farms Week, an activity jointly sponsored by the Cooperative Extension Program and the Agricultural Research Program. During this week, farmers, commodity group representatives, and consumers attend activities both on and off campus involving Extension and research. Through this activity, SAES is able to share information about research underway at the University, and receive input from those that use the research results. Other major outreach activities include field days that bring farmers, commodity groups, and consumers into direct contact with specific SAES research projects. Feedback is also sought about research and research related activities by the researchers, their research teams, and by staff associated with ARP and the University; the input is then shared within SAES and incorporated into future research activities.

### 2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

#### 1. Method to identify individuals and groups

- Use External Focus Groups
- Open Listening Sessions

#### Brief explanation.

The administrators and faculty are represented on a broad variety of local, state and national boards and organizations that provide opportunities to document issues and concerns in the state. These concerns and issues are then shared with others in the School.

### 2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

#### 1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups

#### Brief explanation

A major source of feedback from stakeholders comes from the extensive interaction and networking by individual faculty members. Faculty members serve on agricultural interests boards, are members of agricultural related organizations, and attend meetings of groups that have a stake in the activities and projects of the Agricultural Research Program.

**3. A statement of how the input will be considered**

- To Identify Emerging Issues
- Redirect Research Programs

**Brief explanation.**

The Strategic Planning Council, along with the SAES Associate Dean for Research and Research Director, meet to discuss and use this information in research project reviews, and for Extension planning in response to local and state needs and changes.

## 1. Name of the Planned Program

Human and Community Development

## 2. Program knowledge areas

- 805 Community Institutions, Health, and Social Services 30 %
- 802 Human Development and Family Well-Being 15 %
- 803 Sociological and Technological Change Affecting Individuals, Families and Communities 15 %
- 804 Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures 20 %
- 601 Economics of Agricultural Production and Farm Management 20 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

This planned program involves empowering individuals, families and communities by increasing the knowledge and the skill base, and developing behaviors to address the daily quality of life issues. These issues relate to financial management, parenting and child development, aging, health, adequate nutrition, leadership development. It also relates to personal safety and changing employment prospects. In addition, this planned program involves strengthening of the community infrastructure including housing and effective leadership.

The need to address these problems is especially critical in communities with large portions of underserved populations. A substantial part of this population is located in the Black Belt counties of North Carolina. The Black Belt counties make up 15 of the 22 counties considered by the USDA's Economic Research Service as persistently poor and contain above average concentrations of African Americans. These counties include: Bertie, Bladen, Edgecombe, Halifax, Hertford, Hyde, Jones, Martin, Northampton, Perquimans, Pitt, Sampson, Tyrrell, Warren and Washington. The depressed tobacco economy, agricultural industrialization and environmental injustice have exacerbated the problems of high unemployment, poverty, and low educational attainment in these communities.

## 6. Situation and priorities

Adequate life span development of the individual is essential for building vibrant and viable communities. Well-rounded individuals are the building blocks of families, which in turn form the building blocks of communities. The Human and Community Development Initiative in the School and Environmental Sciences underscore the importance of individuals, families and communities. The initiative consists of a team of teaching, research and cooperative extension faculty. Activities of the team are designed to be synergistic, complementary and supplemental to the activities of the five other initiatives in the School of Agriculture and Environmental Sciences at North Carolina. Whether as a group or as individuals, members of the Human and Community Development Initiative team are involved in an array of activities in instruction, research and cooperative extension that deal with traditional and contemporary problems that confront individuals and communities. Although the program serves all communities in the state, the need to address these problems is especially critical in communities with large portions of underserved populations. A substantial part of this population is located in the Black Belt counties of North Carolina. The Black Belt counties make up 15 of the 22 counties considered by the USDA's Economic Research Service as persistently poor and contain above average concentrations of African Americans. These counties include: Bertie, Bladen, Edgecombe, Halifax, Hertford, Hyde, Jones, Martin, Northampton, Perquimans, Pitt, Sampson, Tyrrell, Warren and Washington. The depressed tobacco economy, agricultural industrialization and environmental injustice have exacerbated the problems of high unemployment, poverty, and low educational attainment in these communities.

In addition to traditional approaches, some innovative approaches are necessary to address emerging problems related to human and community development. The Human and Community Development Initiative team is involved in finding and implementing solutions to these problems through the following focus areas.

human development

leadership and volunteer development

community and economic development

community infrastructure  
 food and agricultural policy

**7. Assumptions made for the Program**

- Individuals and families seek to improve their personal, social and economic situation.
- Communities can improve their infrastructure and economic situation through improved leadership and with research-based information to guide decisions

**8. Ultimate goal(s) of this Program**

The ultimate goal of this program is to conduct social-science research that will provide information which individuals, families and communities can use to improve the quality of life.

**9. Scope of Program**

- In-State Research

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	3.0
2008	0.0	0.0	0.0	3.5
2009	0.0	0.0	0.0	4.0
2010	0.0	0.0	0.0	4.5
2011	0.0	0.0	0.0	4.5

**Outputs for the Program**

**13. Activity (What will be done?)**

Conduct research studies  
 Develop databases  
 Disseminate results in papers and presentations

**14. Type(s) of methods will be used to reach direct and indirect contacts**

Extension	
Direct Method	Indirect Methods
● {NO DATA ENTERED}	● {NO DATA ENTERED}

**15. Description of targeted audience**

Individuals and families living in rural areas  
 Underserved populations  
 Rural communities  
 Policy makers  
 Community based organizations

**16. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

Database of community-based organizations

2007 Target: 0  
 2008 Target: 0  
 2009 Target: 0  
 2010 Target: 0  
 2011 Target: 0

**Output Text**

# presentations at professional meetings

2007 Target: 0  
2008 Target: 5  
2009 Target: 8  
2010 Target: 8  
2011 Target: 10

**Output Text**

# media occurrences

2007 Target: 8  
2008 Target: 10  
2009 Target: 12  
2010 Target: 14  
2011 Target: 15

**Output Text**

# published articles in research and other professional journals

2007 Target: 4  
2008 Target: 5  
2009 Target: 5  
2010 Target: 7  
2011 Target: 9

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

# organizations accessing and using database of community-based organizations

**Outcome Type:** Medium

2007 Target: 0  
2008 Target: 0  
2009 Target: 100  
2010 Target: 100  
2011 Target: 200

**Outcome Text**

# policy makers who acknowledge and use data on farmland loss

**Outcome Type:** Medium

2007 Target: 0  
2008 Target: 0  
2009 Target: 20  
2010 Target: 0  
2011 Target: 0



**Outcome Text**

Revision of Community Voices curricula by Extension specialists and others to include data from research study

**Outcome Type:** Medium

- 2007 Target: 0
- 2008 Target: 0
- 2009 Target: 1
- 2010 Target: 0
- 2011 Target: 0

**Outcome Text**

# policy makers using data to reduce installation and other challenges faced by manufactured home owners.

**Outcome Type:** Short

- 2007 Target: 0
- 2008 Target: 5
- 2009 Target: 0
- 2010 Target: 0
- 2011 Target: 0

**20. External factors which may affect outcomes**

- Public Policy changes
- Government Regulations

**Description**

Regulations regarding manufactured housing may affect how the data generated will be used. Also, changes in policies regarding farmland use/loss may affect the outcomes.

**21. Evaluation studies planned**

- During (during program)

**Description**

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. An evaluation position is currently being filled. The person in this position will assist in developing the annual measures of the six planned programs.

**22. Data Collection Methods**

- Mail
- Telephone
- On-Site
- Structured

**Description**

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed as a result of a new evaluation position be added to the staff.

## 1. Name of the Planned Program

Biotechnology and Biodiversity

## 2. Program knowledge areas

- 403 Waste Disposal, Recycling, and Reuse 20 %
- 308 Improved Animal Products (Before Harvest) 30 %
- 302 Nutrient Utilization in Animals 10 %
- 311 Animal Diseases 10 %
- 133 Pollution Prevention and Mitigation 30 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

Research focusing on using biotechnology in the development of agricultural and related products is the focus of this planned program. Current agricultural production is not meeting the demand for food worldwide made by the increasing population. Innovation is needed to increase this output and to conserve our planet's resources. Biotechnology is one of several complementary means of increasing production through higher yields, better nutritional quality, and reducing the use of chemicals for pest control causing less damage to the environment. Biotechnology is also used to conserve natural resources. The applications of biotechnology are broad, and the advantages so compelling, that virtually every industry is using the technology. Biotechnology is enabling industries to make new or better products, often with greater speed, efficiency and flexibility. Research is needed to assist in the use of this new technological tool new century. This research will assist in guiding safe and function catalyze growth in products derived from biotechnology.

This planned program is included because of the importance of biotechnology and biodiversity to the North Carolina agricultural industry and also because the state's biotechnology industry is among the nation's three largest. The demand for biotechnologists is projected to increase dramatically in the next ten years, especially in North Carolina, where more than 200 companies are involved in biotechnology.

## 6. Situation and priorities

Developments in agricultural biotechnology and genomics allow us to understand the molecular processes that underlie life, revolutionizing agriculture and providing new approaches towards deciphering, protecting and utilizing this planet's rich biodiversity. Thus an unprecedented opportunity for scientific and technological development and agribusiness exists. Agricultural biotechnology and genomics will impact all aspects of life in the new millennium – wellness, human resource development/training, post-secondary education, economic development, and renewable resources development strategies. These techno-developments provide new possibilities for rural development and challenging research and educational opportunities for environmental issues. The demand for biotechnologists is projected to increase dramatically in the next ten years, especially in North Carolina, where more than 200 companies are involved in biotechnology.

Biodiversity is the foundation of sustainable agriculture, crop improvement, ecosystem stability, medicines, and other essential aspects of our society, both present and future. Thus, conserving biodiversity is extremely important. The Institute for Genomic Diversity was established with a mission to serve the global community through the development, application, and dissemination of genomics and bioinformatics technologies to problems affecting biodiversity conservation, and food security.

The Biotechnology and Biodiversity Program Initiative is currently structured around six areas:

plant tissue culture and transformation  
bioremediation/phytoremediation  
fermentation  
food safety  
mushroom biology and biotechnology  
molecular biology

genomics  
 bioinformatics

**7. Assumptions made for the Program**

- The focus on biotechnology and biodiversity will continue and expand
- Funding for studies in competitive funding will increase

**8. Ultimate goal(s) of this Program**

The ultimate goal is to address the issues in biotechnology and biodiversity, and to provide answers that can help industries that include agriculture or are agriculturally-related.

**9. Scope of Program**

- In-State Research
- Multistate Research

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	1.8
2008	0.0	0.0	0.0	2.0
2009	0.0	0.0	0.0	2.3
2010	0.0	0.0	0.0	2.5
2011	0.0	0.0	0.0	2.5

**Outputs for the Program**

**13. Activity (What will be done?)**

Conduct research studies  
 Give presentations at professional meetings  
 Publish in professional journals

**14. Type(s) of methods will be used to reach direct and indirect contacts**

Extension	
Direct Method	Indirect Methods
● {NO DATA ENTERED}	● {NO DATA ENTERED}

**15. Description of targeted audience**

Companies involved in biotechnology applications  
 Farmers involved in producing agricultural products using biotechnology and those that are considering it  
 Consumers

**16. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

# articles published in research and other professional journals

2007 Target: 3  
 2008 Target: 5  
 2009 Target: 7  
 2010 Target: 8  
 2011 Target: 9

**Output Text**

# presentations at professional meetings

2007 Target: 6  
2008 Target: 7  
2009 Target: 8  
2010 Target: 9  
2011 Target: 10

**Output Text**

# media occurrences

2007 Target: 0  
2008 Target: 0  
2009 Target: 0  
2010 Target: 0  
2011 Target: 0

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

# of licenses of current patents

**Outcome Type:** Long

2007 Target: 0  
2008 Target: 0  
2009 Target: 1  
2010 Target: 0  
2011 Target: 0

**Outcome Text**

# of filings for intellectual property

**Outcome Type:** Long

2007 Target: 0  
2008 Target: 1  
2009 Target: 0  
2010 Target: 1  
2011 Target: 0

**20. External factors which may affect outcomes**

- Economy
- Public Policy changes
- Government Regulations

**Description**

North Carolina state funding has a strong focus on the development of biotechnology as an engine for economic development. Competing needs in the state may direct some monies and attention from biotechnology. This could affect how findings from

our research studies would be used.

Public policy could affect how biotechnology is used in our society for food and non-food products. Restrictions in these areas could affect our outcomes and could shift our research focus.

## 21. Evaluation studies planned

- During (during program)

### Description

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. An evaluation position is currently being filled. The person in this position will assist in developing the annual measures.

## 22. Data Collection Methods

- Mail
- Telephone
- Structured

### Description

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed as a result of a new evaluation position being added to the staff.

## 1. Name of the Planned Program

Soil and Water Quality

## 2. Program knowledge areas

- 102 Soil, Plant, Water, Nutrient Relationships 34 %
- 112 Watershed Protection and Management 22 %
- 205 Plant Management Systems 28 %
- 403 Waste Disposal, Recycling, and Reuse 8 %
- 133 Pollution Prevention and Mitigation 8 %

## 3. Program existence

- Mature (More than five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

The primary focus of this planned program is on improving soil and water quality through agricultural “best management practices” that increase soil organic matter content and reduce tillage. A primary audience for this initiative is small-scale and limited resource farmers in the state.

Good soil management practices prevent soil erosion and reduce runoff, major causes of soil degradation in North Carolina. Erosion results in (soil) sediment movement to surface waters. Sediment can come from many sources: agricultural fields, woodlands, highway road banks, construction sites, and mining operations. Sediment destroys fish spawning beds, reduces useful storage volume in reservoirs, clogs streams, makes costly filtration necessary for municipal water supplies, and can result in costly environmental, economic, and social damages. Runoff water also can transport nutrients that result in algal blooms and resulting damage to surface water biota. Runoff can carry potentially harmful nutrients, chemicals, and pesticides to surface and ground waters. Erosion of sediments and runoff can be reduced with the employment of best management practices on farms; for example grassed waterways, terraces, surface residues, improved soil structure, and increased organic matter.

Also, research is needed in this natural resource area because North Carolina is a leader in the amount of animal waste resulting from the production of hogs, poultry and other animals for the food supply. This waste must be handled in an environmentally friendly, safe and adequate manner.

This research is needed to address the soil and water quality but also is especially needed by small-scale and limited resources farmers in the state, who need solutions tailor made to assure economic benefits to their production processes.

## 6. Situation and priorities

The southeastern United States, and North Carolina in particular, is a rapidly growing region. Rapid growth needs to be supported by sound environmental decisions that preserve and enhance the soil and water quality of the region. The university faculty will implement research projects to investigate Best Management Practices that improve soil and water quality and mitigate environmental degradation resulting from urban and suburban development.

**Past soil management practices, designed to meet the food and fiber needs of an increasing population, have taxed the resiliency of natural processes to maintain global balances of energy and matter. The degradation of our soil resources is motivating researchers and farmers to investigate and employ less input-intensive and more sustainable management systems that protect the environment and soil resources. Good soil management practices prevent soil erosion and reduce runoff, major causes of soil degradation in North**

## Carolina.

North Carolina's livestock industry contributes a great deal to the state's economy and to farm income. Small-scale livestock production is a viable alternative for small farmers seeking to diversify cropping enterprises. Managing manure and other waste products produced by livestock in a sustainable, ecologically sensitive manner that is respectful of the community's right to a healthy, odor and pollution-free environment is a challenge for farmers. Traditional management practices for livestock waste have in some cases resulted in overloading soils with nutrients and trace materials, and in pollution of surface and groundwater. Alternatives to traditional practices for waste treatment are needed, particularly those appropriate to small and resource-limited farmers. In most cases, these farmers lack the capital to install highly technical and expensive treatment systems, as well as the expertise and training to run and maintain them.

Normally, the contribution of water pollutants from a homeowner's lawn, the grounds of a business establishment, or recreational turf, such as golf courses or athletic fields, is small. However, when millions of small inputs are added together, the impact on water quality may be significant. Population increases and construction of housing and business development make this situation acute in North Carolina. The key to minimizing this collective impact is reducing the levels of pollutants that enter the system. Best management practices in the urban environment to maintain high quality water in North Carolina watersheds include: sensible subdivision practices such as management of impervious surfaces, reduction in fertilizer and pesticide applications to the urban and suburban landscape (private properties of all sizes), proper maintenance of wastewater collection and treatment systems, and water conservation.

The research will address soil and water quality issues in North Carolina. Specific focus areas include:

- Agricultural Best Management Practices
- Non-Agricultural Best Management Practices

### 7. Assumptions made for the Program

- Limited resource and small scale farmers are leaving the farming community rapidly.
- Limited resource and small scale farmers can be assisted with practices that allow them to remain in the farming industry
- Water quality and quantity will become more of an environmental and health issue nationally
- Research funds for water quality and quantity will increase

### 8. Ultimate goal(s) of this Program

Improve the soil and water quality in North Carolina

### 9. Scope of Program

- In-State Research

### Inputs for the Program

#### 10. Expending formula funds or state-matching funds

- Yes

#### 11. Expending other than formula funds or state-matching funds

- No

#### 12. Expending amount of professional FTE/SYs to be budgeted for this Program



Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	1.8
2008	0.0	0.0	0.0	2.0
2009	0.0	0.0	0.0	2.5
2010	0.0	0.0	0.0	3.0
2011	0.0	0.0	0.0	3.0

**Outputs for the Program**

**13. Activity (What will be done?)**

- Conduct research studies
- Conduct training workshops for small-scale and limited resource farmers
- Participate in field days
- Present findings at professional meetings
- Publish research in professional journals

**14. Type(s) of methods will be used to reach direct and indirect contacts**

Extension	
Direct Method	Indirect Methods
● {NO DATA ENTERED}	● {NO DATA ENTERED}

**15. Description of targeted audience**

- Extension educators
- Small-scale and limited resource farmers
- Environmental groups interesting in preserving soil and water quality

**16. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

# field days

2007 Target: 1  
 2008 Target: 1  
 2009 Target: 1  
 2010 Target: 1  
 2011 Target: 1

**Output Text**

# presentations at professional meetings

2007 Target: 3  
 2008 Target: 4  
 2009 Target: 5  
 2010 Target: 6  
 2011 Target: 7

**Output Text**

# articles published in research and other professional journals

2007 Target: 5  
 2008 Target: 5  
 2009 Target: 5  
 2010 Target: 5  
 2011 Target: 5

**Output Text**

# workshops on improved soil and water management practices

2007 Target: 0  
 2008 Target: 3  
 2009 Target: 4  
 2010 Target: 0  
 2011 Target: 0

**Output Text**

# media occurrences

2007 Target: 4  
2008 Target: 5  
2009 Target: 6  
2010 Target: 8  
2011 Target: 10

## Outcomes for the Program

### 19. Outcome measures

#### Outcome Text: Awareness created

##### Outcome Text

% farmers adopting improved soil and water quality management practices

##### Outcome Type: Short

2007 Target: 0  
2008 Target: 0  
2009 Target: 0  
2010 Target: 0  
2011 Target: 0

##### Outcome Text

Development of water treatment (wetlands) for small-scale farmers

##### Outcome Type: Long

2007 Target: 0  
2008 Target: 0  
2009 Target: 0  
2010 Target: 0  
2011 Target: 1

### 20. External factors which may affect outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Government Regulations

#### Description

The outcomes of this planned program could be seriously affected by natural disasters as well as changes in government regulations. North Carolina may change water quality regulations that could affect the farming population.

### 21. Evaluation studies planned

- During (during program)

#### Description

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School and Environmental Sciences. A position for an evaluation specialist is currently being filed. The person in this position will assist in developing the annual measures of the planned program.

### 22. Data Collection Methods

- Mail
- Telephone
- On-Site
- Structured

**Description**

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed when a new evaluation position is added to the staff.

## 1. Name of the Planned Program

Agromedicine, Nutrition and Food Safety

## 2. Program knowledge areas

- 703 Nutrition Education and Behavior 12 %
- 204 Plant Product Quality and Utility (Preharvest) 10 %
- 503 Quality Maintenance in Storing and Marketing Food Products 10 %
- 502 New and Improved Food Products 30 %
- 712 Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occuring Toxi 20 %
- 701 Nutrient Composition of Food 18 %

## 3. Program existence

- Intermediate (One to five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

The production and consumption of agricultural products is associated with significant risks of injuries and illnesses such as on-farm occupational injuries, infections from foodborne pathogens, communicable disease of animal origin, nutritional deficiencies and environmental and health disparities. Underserved communities are disproportionately impacted by many of these preventable injuries and illnesses. The cumulative cost of these agricultural health and safety problems poses considerable financial burden on nation's economy due to economic losses due to health care cost, loss of productivity, and decreased overall quality of life.

Many chronic diseases including heart disease, stroke, hypertension, diabetes and some forms of cancer, are related to nutritional factors. The prevalence of some of these chronic conditions is higher among certain ethnic minority groups. Several demographic and nutrition-related shifts are occurring in North Carolina and the nation. One is the increased rate of growth of the Hispanic population in the nation and particularly in the state. Another change in society is increased attention being given to functional foods and nutraceuticals as ways to address the health of the population.

Research is needed to address the health and safety needs of agricultural forestry and fisheries communities and consumers of agricultural products with special attention to underserved communities.

## 6. Situation and priorities

Agriculture is a multibillion-dollar industry that is vital to the US economy, in general and to the state of North Carolina in particular. In fact, agriculture is a \$68.3 billion a year industry that employs 20 percent of North Carolina's work force. However, farming is second only to mining as the most dangerous occupation in the United States.

The cost of health care in North Carolina from farm-related injuries exceeds \$200 million annually. Forestry and commercial fishing are nearly as dangerous as farming.

There are also community and environmental health concerns associated with these rural occupations that not only impact the well being of rural residents but also the consumers of agricultural products as well. These include health care access and delivery, environmental contaminants (water and air quality), food safety, nutrition, and more recently biosecurity issues. Among these issues, food safety and nutrition represent major sources of preventable diseases that cost the nation billions of dollars each year. An estimated 76 million people contract foodborne illnesses each year in the US, accounting for 325,000 hospitalizations and more than 5,000 deaths. This translates into a yearly cost of all foodborne diseases in the US is \$30 billion in direct medical expenses and lost productivity. Nutrition related health problems (e.g., obesity, diabetes, cardiovascular diseases) are major public health concerns especially with recent data showing a third of the US population classified as obese. The National Institute of Health estimates cost of obesity at \$99.2 billion/year with obesity related diseases such as diabetes, heart diseases, osteoarthritis, cancer, and hypertension costing the nation over \$187 billion/year.

To address these health and safety challenges in North Carolina and find solutions specifically tailored to the needs of underserved communities, the planned program of “Agromedicine, Nutrition and Food Safety” has the following thrust areas:

- nutrition
- occupational health and safety
- food safety
- zoonotic diseases
- nutraceutical, functional, and organic foods
- minority and environmental health

**7. Assumptions made for the Program**

Nutrition-related health problems will continue and research can help reduce these problems.  
 Food safety concerns can be adequately addressed through use of research-based technologies  
 Funding will continue and strengthen in the area of agromedicine, nutrition and food safety

**8. Ultimate goal(s) of this Program**

The ultimate goals of this planned program are the following:  
 Reduce nutritionally-related health problems through improved nutrition  
 Reduce foodborne illness through improved food safety  
 Address problems related to safety in the production of agricultural and agriculturally-related products  
 Develop new food products or improve existing food products

**9. Scope of Program**

- In-State Research

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	4.7
2008	0.0	0.0	0.0	5.5
2009	0.0	0.0	0.0	5.7
2010	0.0	0.0	0.0	6.0
2011	0.0	0.0	0.0	6.5

**Outputs for the Program**

**13. Activity (What will be done?)**

- Conduct research experiments
- Present findings at professional meetings
- Publish research findings in professional journals
- Seek patents in appropriate new discoveries

**14. Type(s) of methods will be used to reach direct and indirect contacts**

Extension	
Direct Method	Indirect Methods
● {NO DATA ENTERED}	● {NO DATA ENTERED}

**15. Description of targeted audience**

The target audience for this research are the following:  
 Extension educators for use in programs and outreach activities  
 Companies involved in health and nutrition related products and/or food safety

**16. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	1
2008	1
2009	1
2010	1
2011	1

**18. Output measures**

**Output Text**

# new patents in food and food-related discoveries

2007 Target: 1  
 2008 Target: 1  
 2009 Target: 1  
 2010 Target: 1  
 2011 Target: 1

**Output Text**

# presentations at professional meetings

2007 Target: 4  
2008 Target: 5  
2009 Target: 6  
2010 Target: 7  
2011 Target: 8

**Output Text**

# articles published in research and other professional journals

2007 Target: 4  
2008 Target: 5  
2009 Target: 6  
2010 Target: 6  
2011 Target: 7

**Output Text**

# media occurrences

2007 Target: 5  
2008 Target: 6  
2009 Target: 8  
2010 Target: 9  
2011 Target: 10

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

# of companies purchasing licenses for food and food safety related patents

**Outcome Type:** Medium

2007 Target: 0  
2008 Target: 1  
2009 Target: 1  
2010 Target: 1  
2011 Target: 1

**Outcome Text**

# of adolescents reducing their overweight and obesity status

**Outcome Type:** Medium

2007 Target: 0  
2008 Target: 50  
2009 Target: 50  
2010 Target: 200  
2011 Target: 200



**Outcome Text**

# hispanic women adopting healthy nutrition and exercise practices

**Outcome Type:** Short

2007 Target: 30

2008 Target: 30

2009 Target: 0

2010 Target: 0

2011 Target: 0

**20. External factors which may affect outcomes**

- Populations changes (immigration,new cultural groupings,etc.)
- Other (National public health problem)

**Description**

A number of extenal factors could affect the outcomes of this planned program. One is that there could be a national health problem that may change the direction of the research to address the concern. One may be a special problem with food safety related to terrorist activity. Also a major change would be a more dramatic increase in obesity in the Hispanic population.

**21. Evaluation studies planned**

- During (during program)

**Description**

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. A postion for an evaluation specialist is currently being filed. The person in this position will assist in developing the annual measures of the planned program.

**22. Data Collection Methods**

- Mail
- Telephone
- Structured

**Description**

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed when a new evaluation position is added to the staff.

## 1. Name of the Planned Program

Small Scale Agriculture

## 2. Program knowledge areas

- 205 Plant Management Systems 17 %
- 202 Plant Genetic Resources 13 %
- 308 Improved Animal Products (Before Harvest) 13 %
- 401 Structures, Facilities, and General Purpose Farm Supplies 32 %
- 203 Plant Biological Efficiency and Abiotic Stresses Affecting Plants 17 %
- 206 Basic Plant Biology 8 %

## 3. Program existence

- Mature (More than five years)

## 4. Program duration

- Long-Term (More than five years)

## 5. Brief summary about Planned Program

North Carolina A&T State University is in the unique position to address issues related to African-American farmers and limited-resource farmers in North Carolina. This program in Small-Scale Agriculture will among other objectives, enhance coordination of research, outreach and extension efforts, technical assistance, and other educational efforts to enhance the potential of socially disadvantaged farmers and ranchers to successfully acquire, own, operate, and retain farms and ranches, and to participate equitably in the full range of agricultural programs available to all farmers.

A major thrust of the agricultural research program is to work in tandem with Extension to locate and determine the marketing parameters of alternatives to tobacco farming. Small farmers are particularly affected by the tobacco decline and are the primary focus of the research/Extension efforts. The focus is to assist tobacco farmers in transitioning from growing tobacco to the production and successful marketing of niche and alternative products such as upscale pork, exotic mushrooms, wine vineyards, and cut flowers. Also, attention will focus on opportunities for value-added agriculture especially on using swine waste for energy resources.

This planned program is included because of the research needs of the state regarding small farms and the movement away from the traditional crop of tobacco. Rural communities and the state economic situation will benefit from this planned program.

## 6. Situation and priorities

The most widely used description of the structure of agriculture is based on the statistic of gross farm sales. The USDA Economic Research Service labels three-fourths of the Nation's farms that have annual gross sales under \$50,000 as "non-commercial" farms, meaning they do not generate enough sales to be commercially viable on their own. Even for farmers in the next highest sales class, from \$50,000 gross sales to \$250,000 gross sales, where 86 percent of these farmers count farming as their primary occupation, the average return on equity is negative.

In 2002, the last year for which data are available, there were 53,930 farms in North Carolina with 9.1 million acres in farming. Included in these totals were 1,797 Black (non-white) farmers on 155,000 acres. This compares with 287,000 total farms on 186 million acres in 1950. In that year, 76,000 Black farmers farmed 3.1 million acres. In the last 25 years, the population of Black farmers has decreased by approximately 50%. Only 5% of principle farm enterprises reported by Black farmers in 2002 could be classified as specialty crops (fruits, vegetables, nurseries) enterprises.

North Carolina A&T State University is in the unique position to address issues related to African-American farmers in North Carolina and limited-resource farmers in the state as it is in line with the mandate of the Cooperative Extension Program. Consequently, the principal focus of the Small-Scale Agriculture planned program in the School of Agriculture and Environmental Sciences will be the limited-resource and African-American farmers in North Carolina.

Efforts include the use of development of specialty crop and livestock enterprises appropriate to direct marketing opportunities with urban consumers, utilization of sustainable farm management that foster the economic and social sustainability of low-income and socially disadvantaged, and the development of innovative delivery- systems that improve the effectiveness of current and visionary programs contemplated by the initiative. These efforts will address those issues identified previously that have led to and continue to encourage the departure of the Black farmer and the limited-resource farmer from the rural North Carolina agricultural landscape.

North Carolina A&T State University will develop teaching, research, and extension programs to preserve small farms as viable components of American agriculture. Small-scale agriculture will strengthen American society. Specific focus areas include:

- Small-scale Agricultural Enterprises and Production Practices
- Alternative Marketing Strategies

**7. Assumptions made for the Program**

A continued drop in small-farm operations will continue in North Carolina  
 Research on factors affecting small farms can reduce loss in small farm operations  
 The effects of loss of tobacco production will intensify especially for small farmers

**8. Ultimate goal(s) of this Program**

The ultimate goal is to provide research and supportive systems to allow small farmers to continue in farming.

**9. Scope of Program**

- In-State Research

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other then formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	2.4
2008	0.0	0.0	0.0	2.4
2009	0.0	0.0	0.0	2.5
2010	0.0	0.0	0.0	2.5
2011	0.0	0.0	0.0	3.0

**Outputs for the Program**

**13. Activity (What will be done?)**

- Conduct research studies
- Provide expertise supportive in alternative crop and income stream production
- Conduct training sessions/field days for small farmers
- Present research findings at professional conferences
- Publish articles in research journals

**14. Type(s) of methods will be used to reach direct and indirect contacts**

Extension	
Direct Method	Indirect Methods
● {NO DATA ENTERED}	● {NO DATA ENTERED}

**15. Description of targeted audience**

{NO DATA ENTERED}

**16. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

# presentations at professional meetings

2007 Target: 6  
 2008 Target: 7  
 2009 Target: 7  
 2010 Target: 8  
 2011 Target: 9

**Output Text**

# articles published in research and other professional journals

2007 Target: 5  
2008 Target: 5  
2009 Target: 6  
2010 Target: 6  
2011 Target: 7

**Output Text**

# media occurrences

2007 Target: 6  
2008 Target: 7  
2009 Target: 9  
2010 Target: 9  
2011 Target: 10

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

# mushroom growers

**Outcome Type:** Short

2007 Target: 0  
2008 Target: 200  
2009 Target: 240  
2010 Target: 250  
2011 Target: 300

**Outcome Text**

# lbs and sales in mushroom production

**Outcome Type:** Short

2007 Target: 0  
2008 Target: 0  
2009 Target: 0  
2010 Target: 0  
2011 Target: 0

**20. External factors which may affect outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Public Policy changes
- Government Regulations

**Description**

External factors that could impact the outcomes of this planned program include natural disasters like hurricanes that could bring immediate ruin and needed assistance to small farmers. Public policy and government changes could impact the outcomes of this planned program. Shifting of program resources may be necessary to address the changes.

## 21. Evaluation studies planned

- During (during program)

### Description

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. A position for an evaluation specialist is currently being filed. The person in this position will assist in developing the annual measures of the planned program.

## 22. Data Collection Methods

- Whole population
- Mail
- Telephone
- On-Site
- Structured

### Description

A variety of methods will be used to collect data regarding the outcomes. These methods will be more fully developed when a new evaluation position is added to the staff.

### 1. Name of the Planned Program

International Trade and Development

### 2. Program knowledge areas

- 611 Foreign Policy and Programs 60 %
- 610 Domestic Policy Analysis 40 %

### 3. Program existence

- Intermediate (One to five years)

### 4. Program duration

- Long-Term (More than five years)

### 5. Brief summary about Planned Program

This planned program of International Trade and Development focuses on conducting research on issues and factors related to increasing international markets for food and agricultural and related products produced by North Carolina small scale farmers and businesses. This planned research is crucial to be able to assist small scale farmers and businesses in North Carolina develop markets for their food and agricultural products and related products. Finding improved ways to deliver technical assistance will enhance the impact of NCA&T's planned program and improve the economic status of small farmers and businesses. Also, as a result, the economic status of rural communities where these entities are located will be enhanced.

Specifically, this planned program has three major research thrusts: (1) economic development research used to deliver technical assistance to small scale farmers and rural businesses in leveraging capital to enhance economic growth; (2) international trade policy research conducted to assess policy implications relative to domestic, regional and world trade and U. S. competitiveness; (3) applied international marketing research completed to gain greater understanding of traditional markets in Europe and North America and identifying U. S. niche market opportunities especially for small farmers and businesses.

### 6. Situation and priorities

In North Carolina, the issue is that small scale farmers and businesses need to expand the markets for their food and agricultural and related products in order to be economically viable. The international opportunities provide a potential market for these products. However, small farmers and businesses need information, training and assistance to be effective players in the international arena. Research is needed to understand better ways to assist farmers and also to understand the implications and impact of both domestic and international policies on their involvement in the international markets.

The School of Agriculture and Environmental Sciences (SAES) has developed this initiative on International Trade and Development to help disadvantaged rural communities fuel economic growth by becoming players in the global marketplace. The International Trade Center has been established to lead the efforts.

The SAES has the scope of disciplinary expertise and wealth of experience to undertake research to address developing country food security, economic growth, and poverty alleviation and environmental sustainability problems. On going projects include the integrated pest management project being undertaken in Mali, and two research projects studying potential to improve market access for U.S. livestock and pork in the newly liberalized Chinese market.

The International Trade Center is well equipped to conduct international trade policy research, especially in tracking emerging issues that influence the competitiveness of North Carolina and U.S. agriculture. It also conducts applied international business marketing research to afford better understanding of both traditional and non-traditional/emerging markets abroad. Lessons learned from the research conducted on farm cooperatives contribute to improving farm profitability and enhancing the quality of life for rural-based limited-resource farm communities.

Emphasis and studies will focus on the following areas:

- economic development research
- international trade policy research
- applied international marketing research

**7. Assumptions made for the Program**

- Export of food and agricultural products and related products will increase
- Small farmers and businesses have food and agricultural products that can be successfully marketed internationally
- Small farmers and businesses can be effective players in the international arena when they have knowledge on procedures and policy that affect their involvement
- Funding will be available for research on understanding and increasing international markets for small farm and business operations.

**8. Ultimate goal(s) of this Program**

The ultimate goal is to increase the competitiveness of small farmers and businesses in North Carolina to market their food and agricultural products and related products.

**9. Scope of Program**

- In-State Research
- Multistate Research

**Inputs for the Program**

**10. Expending formula funds or state-matching funds**

- Yes

**11. Expending other than formula funds or state-matching funds**

- No

**12. Expending amount of professional FTE/SYs to be budgeted for this Program**

Year	Extension		Research	
	1862	1890	1862	1890
2007	0.0	0.0	0.0	1.3
2008	0.0	0.0	0.0	1.3
2009	0.0	0.0	0.0	1.5
2010	0.0	0.0	0.0	2.0
2011	0.0	0.0	0.0	2.0

**Outputs for the Program**

**13. Activity (What will be done?)**

- Conduct research studies
- Disseminate results in papers and presentations
- Travel to countries to conduct research on developing markets for NC food and agricultural products



**14. Type(s) of methods will be used to reach direct and indirect contacts**

Extension	
Direct Method	Indirect Methods
● {NO DATA ENTERED}	● {NO DATA ENTERED}

**15. Description of targeted audience**

The target audience includes the producers in small scale agriculture and small businesses in North Carolina.

**16. Standard output measures**

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2007	0	0	0	0
2008	0	0	0	0
2009	0	0	0	0
2010	0	0	0	0
2011	0	0	0	0

**17. (Standard Research Target) Number of Patents**

Expected Patents	
Year	Target
2007	0
2008	0
2009	0
2010	0
2011	0

**18. Output measures**

**Output Text**

# articles published in research and other professional journals

- 2007 Target: 2
- 2008 Target: 3
- 2009 Target: 4
- 2010 Target: 4
- 2011 Target: 4

**Output Text**

# presentations at professional meetings

2007 Target: 5  
2008 Target: 5  
2009 Target: 5  
2010 Target: 5  
2011 Target: 5

**Output Text**

# foreign trips to develop markets for NC products

2007 Target: 2  
2008 Target: 2  
2009 Target: 1  
2010 Target: 1  
2011 Target: 1

**Output Text**

# media occurrences

2007 Target: 5  
2008 Target: 6  
2009 Target: 8  
2010 Target: 9  
2011 Target: 10

**Outcomes for the Program**

**19. Outcome measures**

**Outcome Text: Awareness created**

**Outcome Text**

Number of different NC products exported

**Outcome Type:** Medium

2007 Target: 2  
2008 Target: 3  
2009 Target: 4  
2010 Target: 4  
2011 Target: 5

**Outcome Text**

Number of small farmers and businesses trained and becoming involved in export of their products

**Outcome Type:** Long

2007 Target: 2  
2008 Target: 3  
2009 Target: 4  
2010 Target: 5  
2011 Target: 5

**Outcome Text**

Percentage of increased income by farmers and businesses served by the International Trade Center

**Outcome Type:** Long

2007 Target: 5  
2008 Target: 5  
2009 Target: 10  
2010 Target: 10  
2011 Target: 10

**Outcome Text**

Percentage of stakeholders who use the information and policy research in their decision making

**Outcome Type:** Long

2007 Target: 0  
2008 Target: 0  
2009 Target: 25  
2010 Target: 0  
2011 Target: 0

**20. External factors which may affect outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Public Policy changes
- Government Regulations
- Other (Negotiations at the WTO)

**Description**

Public policy and government regulations regarding export of US products could greatly impact the outcomes. Outcomes could be increased by positive policy and regulation and greatly dwarfed by negative decisions.

**21. Evaluation studies planned**

- Before-After (before and after program)
- During (during program)
- Case Study

**Description**

Evaluation studies will be completed annually as part of the strategic planning and evaluation activities of the School of Agriculture and Environmental Sciences. An evaluation specialist position is currently being filled. This person will assist in developing the annual measures of the planned program.

**22. Data Collection Methods**

- Whole population
- Mail
- Telephone
- On-Site
- Structured
- Case Study
- Observation

**Description**

A variety of measures will be used to collect data regarding the outcomes.