

# **Working Together for Agriculture**

A Strategic Plan for North Carolina Agricultural Research Stations

May 1, 2009

**We share a common vision and a continuing commitment to work together to enhance the future of agriculture and agribusiness in North Carolina because we believe that:**

- Advances in agricultural research are vitally important to economic growth and jobs across our state, especially in our rural communities.**
- Producers depend on new technologies to increase productivity, profitability and sustainability to meet local food demands and global competition.**
- Strong partnerships within our agricultural research system provide greater efficiencies, better resource utilization and mutual benefits.**

Agricultural Alliance of North Carolina	North Carolina Greenhouse Growers Association
Agritourism Networking Association	North Carolina Potato Association
Apple Wedge Packers & Cider	North Carolina Strawberry Association
Biofuels Center of North Carolina	North Carolina Tobacco Trust Fund Commission
Blackland Farm Managers Association	North Carolina Vegetable Growers Association
Board of Agriculture	North Carolina Wine & Grape Council
Cape Fear Vineyards	North Carolina Association of Agricultural Fairs
Carolina Farm Stewardship Association	North Carolina Blueberry Council, Inc.
Carolina Feed Industry Association	North Carolina Cattlemen's Association
Carolina/Virginia Dairy Products Association	North Carolina Christmas Tree Association
Carolinas Cotton Growers Cooperative	North Carolina Cotton Producers Association, Inc.
Circle Grove Seeds, Inc.	North Carolina Egg Association
Cooperative Council of North Carolina	North Carolina Meat Goat Producers, Inc.
Corn Growers Association of North Carolina	North Carolina Peanut Growers Association
Eastern North Carolina Christmas Tree Growers Association	North Carolina Pecan Growers Association, Inc.
Eure Seed Farms, Inc.	North Carolina Pork Council
North Carolina Tomato Growers Association	North Carolina Poultry Federation
North Carolina Plant Food Association	North Carolina Seedsmen's Association
North Carolina Tobacco Growers Association	North Carolina Shellfish Growers Association
North Carolina Agribusiness Council, Inc.	North Carolina Small Grain Growers Association
North Carolina Apple Growers Association	North Carolina Soybean Producers Association
North Carolina Biotechnology Center	North Carolina State Grange
North Carolina Commercial Flower Growers Association	North Carolina Sweet Potato Commission
North Carolina Dairy Producers Association	North Carolina Watermelon Association
North Carolina Farm Bureau	Southeastern Grain & Feed Association
North Carolina Green Industry Council	The Rural Advancement Foundation International - USA

(Inclusion in the above list does not represent an endorsement of the strategic plan.)



**North Carolina Department of Agriculture  
and Consumer Services**

May 1, 2009

Dear Designated Legislative Committees / Friends of North Carolina Agriculture,

Throughout history, the American agricultural industry has repeatedly answered the call to provide the United States and many of our neighbors with an abundant, safe, wholesome food, fiber, and forestry supply. That call is growing louder: world population is projected to continue to grow and worldwide incomes are expected to continue to rise, further increasing demands on our industry. At the same time, agriculture must help to meet our energy needs, and food supplies are threatened. Consumers have voiced an increased interest in the environmental impact of food, fiber, and forestry production practices. Expectations are rising for the high quality applied research necessary for our farmers to sustain our rural economies and meet global competition. This is a critical time for urgent and coordinated action to address the needs of our State's agricultural research system – the so-called “seed corn of the agricultural industry.”

With these concerns and needs in mind, the members of the North Carolina General Assembly directed the Commissioner of Agriculture and the Deans of the State's two land-grant universities to develop a comprehensive strategic plan for the management of our state's agricultural research stations system. Since receiving that mandate, we have been working together to reach our common objective to enhance efficiency, improve effectiveness and modernize our research facilities.

We established a Strategic Planning Council and a Working Group consisting of expert members from each organization. We appointed an External Advisory Committee comprised of 23 leaders in the agriculture community. The Committee met three times, providing valuable input for our plan. We held facilitated discussions with faculty at NCSU and NC A&T, and with research station superintendents, to discuss current challenges and future needs. We conducted “peer reviews” to identify savings and improvements at each research station. We also held four regional meetings across the State to receive public comments and gather information from key farmers, commodity leaders and agricultural communities. Nearly 400 people participated in our planning process.

This plan is only the beginning. We must continue to apply efficiencies in everyday management. Toward that end, we will: 1) refine standard operating procedures to streamline administrative functions and facilitate communications; 2) review and consolidate commodity research programs to realize budget savings; 3) establish an advisory board to actively provide input and guidance; and 4) publish an annual report of research station projects and activities.

We share a common vision and a continuing commitment to work together to enhance the future of North Carolina agriculture. We certainly appreciate your ongoing support.

Sincerely,

Steven W. Troxler  
Commissioner

Johnny C. Wynne  
Dean and Executive Director  
for Agricultural Programs

Donald R. McDowell  
Interim Dean

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# **WORKING TOGETHER FOR AGRICULTURE**

## A Strategic Plan for North Carolina Agricultural Research Stations

### Executive Summary

The North Carolina General Assembly directed North Carolina State University, North Carolina A&T State University and the North Carolina Department of Agriculture and Consumer Services to collaborate and develop a comprehensive strategic plan for management of North Carolina's agricultural research stations and the university research farm managed by NC A&T State University. The plan is to identify ways to operate the facilities more efficiently and effectively.

Three groups were formed to assist in developing the strategic plan: the Strategic Planning Council, the Strategic Planning Working Group and the External Advisory Committee. These three groups helped guide plan development, while input was collected from research station superintendents, NCSU and NC A&T faculty members and the public. In addition, the NCDA&CS Research Stations Division developed and implemented a peer review process used to conduct internal assessments of each research station.

Recognizing that agricultural research is critical to sustain our rural economy and promote economic development, this process produced a strategic plan that consists of four goals for North Carolina's research stations.

#### **1. Enhance infrastructure for high-quality applied agricultural research**

Technology and equipment needed to support the latest agricultural research and efficient station operation will be identified and prioritized. However, current Research Stations Division funding is not adequate to purchase new technologies and update facilities. Alternative funding sources in addition to state appropriated funding may need to be explored to meet station needs.

The Research Stations Division will also conduct comprehensive energy audits and explore and pursue resource conservation measures that make use of biofuels, solar energy and water use conservation. Station and research project leaders will work cooperatively to develop a crop rotation program across the Research Station System, making the best use of available land.

The human component of the system will be strengthened by implementing a staff training program that will provide a minimum of 2-3 days of in-depth training annually. However, if the Research Stations Division is to retain well-trained employees, all career-banded positions must be funded to 90 percent of the market rate.

The funding available for infrastructure development will be maximized by filling in-house engineering positions and seeking flexibility within current state building codes to define structures erected on research stations as agricultural buildings.

## **2. Ensure efficient research station and farm management**

Improved systems for initiating, tracking and evaluating research projects will be developed along with a systematic method of communicating among research faculty and station personnel.

An administrative review team will evaluate station activities to determine whether certain stations should be designated for specific types of research and whether facilities at specific stations are adequate to support research on various agricultural commodities. Reviews will consider the following specific circumstances.

1. Combining management of the Butner Beef Field Laboratory and Umstead Research Farm.
2. Sharing staff and resources between the Mountain Horticultural Crops Research Station and the Mountain Research Station.
3. Continuing to provide for the field and greenhouse research needs of faculty at the North Carolina Research Campus at Kannapolis.
4. Aiding research needs at the Williamsdale Farm Agricultural Extension and Research Facility in Duplin County.

In addition, managing research stations by region will be evaluated.

Receipts from the sale of agricultural commodities produced and timber harvested on research stations will be used to help fund station operations and equipment purchases. An existing program for managing timber and timber receipts, in place since 1989, earmarks receipts for capital improvements.

A new, transparent budgeting process that involves NCDA&CS, NCSU and NC A&T will be developed, while purchasing policies that differ between organizations will be coordinated. A grant writing position will be created and grants committee established in an effort to develop an alternative funding source for research stations.

Finally, uniform Standard Operating Procedures will be developed for all stations, and a peer review process that is already in place and provides periodic assessments of research station operations will be continued.

## **3. Enhance working relationships and communications**

Administrators from all the entities involved will make a concerted effort to communicate more effectively. This effort will include budget meetings, held at least annually, of NCSU and NCDA&CS administrators, budget officers and research station administration. In addition, representatives from all three organizations will be involved in making capital decisions.

An annual report will be produced that provides updated budget information, including grant funding and receipts. The report will document resource utilization, including resource sharing within the system, and will serve as a measure of strategic plan progress. The report will include an update of activities and station improvements.

The Memorandum of Understanding (MOU) on research station operation will be revised to spell

out the roles of NCDA&CS and NCSU while including NC A&T as a partner. The MOU will be evaluated and modified every five years.

NC A&T faculty will be encouraged to use the research stations. To aid in this effort, a manual will be produced that describes procedures and protocols for initiating and implementing research projects. A directory of research projects and associated faculty and a document describing the infrastructure and geophysical characteristics of each station will also be produced. In addition, partnerships with other universities and the community college system will be investigated, as will relationships with other facilities where research is conducted, such as the Williamsdale Farm Agricultural Extension and Research Facility and North Carolina Research Campus. An annual meeting of interested faculty and research station personnel will be initiated, and research station information will be made available on the Web.

#### **4. Strengthening outreach, extension and education**

Efforts will be made to strengthen outreach to increase public awareness of research stations. The External Advisory Group created to help guide Strategic Plan development will be maintained to help provide communication between stations and communities.

Local media will continue to be used to help keep the public informed of field days and other events at stations. Additionally, stations will expand educational outreach activities such as field days. Stations will be made available for workshops and training sessions for agriculture-related groups and will offer tours to commodity groups, local organizations and school groups.

Stations will also take advantage of the Internet to post information and share pictures of station activities. Stations will engage students by providing educational activities such as field days, field trips and associated curriculum development. Finally, station staff and equipment will be made available to assist local communities during disasters.

# WORKING TOGETHER FOR AGRICULTURE

## A Strategic Plan for North Carolina Agricultural Research Stations

### INTRODUCTION

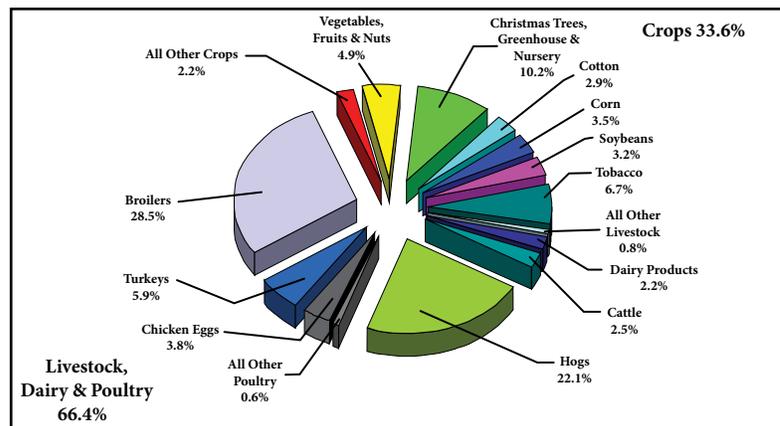
Session Law 2008-107, Sec. 9.13 directed the College of Agriculture and Life Sciences at North Carolina State University (NCSU), the School of Agriculture and Environmental Sciences at North Carolina Agricultural and Technical State University (NC A&T) and the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) to jointly study and develop a comprehensive strategic plan for management of the agricultural research stations and the university research farm at NC A&T. In keeping with their long-standing partnerships, the deans at the universities and the Commissioner of Agriculture agreed to continue working together to seek ways to enhance efficiency, improve effectiveness and modernize the Research Station System. The results of this important, cooperative undertaking will be critical to the future of agriculture and economic development, especially in rural communities across our state.

North Carolina's number one industry by far is agriculture. Including food, fiber, forestry and related agribusinesses, agriculture contributes more than \$70 billion annually to our state's economy, accounts for 19 percent of the state's income and employs more than 644,000 (16 percent) of our workforce. In Sampson County 76.7 percent (\$963 million) of total income in the county comes from agriculture/agribusiness industries; in Alamance County, 19 percent (\$840 million) of total income of the county comes from agriculture/agribusiness industries; and in Henderson County 16.7 percent (\$429 million) of total income in the county comes from agriculture/agribusiness industries. For information on agriculture's contribution to specific counties and regions across North Carolina see

<http://www.ag-econ.ncsu.edu/faculty/walden/counties.htm>.

**Source of Farm Cash Receipts, 2007**

\$8,691,099,000



North Carolina is one of the most diversified agricultural states in the nation. Our 52,000 farmers grow more than 80 different commodities, using 8.6 million of the state's 31 million acres to furnish consumers a dependable and affordable supply of food and fiber. North Carolina produces more tobacco and sweet potatoes than any other state, ranks first in Christmas tree cash receipts

and ranks second in the production of hogs, turkeys and trout. The state ranks eighth nationally in farm profits, with a net farm income of more than \$2.8 billion. (H. Vanderberry, director, NCDA&CS Agricultural Statistics Division, <http://www.agr.state.nc.us/stats/general/overview.htm>).

Research is clearly the key to continued progress in agriculture. Faculty members at NCSU and NC A&T, along with research technicians and managers from NCDA&CS, conduct applied and basic research to develop new knowledge and technologies that support North Carolina agricultural industries, our citizens across the state and people around the world. In most cases, growers can directly adopt applied research to make their farms more successful. Likewise, North Carolina citizens benefit from applied research conducted by faculty in many ways (fresh fruits, healthier and safer foods, fresh vegetables and improved crop and animal farm products, renewable biofuels, etc.). In addition, local food supplies can be critical to homeland security in the event of disasters that disrupt the national or global food distribution system or if food shortages occur as predicted in the future.

Agricultural research has not only helped farmers and consumers; it has yielded significant economic results for all. In 1960, one American farmer produced enough food to feed 25 people. Today, one farmer can feed 129 people. This improvement in productivity is due largely to research. It is predicted that in 50 years the world's population will grow at the rate of three countries equal to the population of China. Food needed in the next 50 years will likely be an amount greater than what the world has produced in the last 10,000 years. This prediction emphasizes the importance of developing technology through agricultural research that will increase the ability of farmers to feed the world's population in the near future.

## **MISSION**

The mission of the North Carolina agricultural Research Station System is to manage crop and livestock facilities at research stations to support agricultural research, extension and teaching programs conducted by university faculty across the state.

## **VISION**

The vision for our Research Station System is to support the agricultural research conducted by university faculty that leads to increased productivity, profitability and sustainability of agriculture in North Carolina and worldwide.

- Advances in agricultural research will produce opportunities for new and emerging industries — opportunities for economic growth centered in rural communities.
- A well-managed system will feature stations with contemporary, modern facilities and equipment needed to conduct field studies; along with processing and storage facilities that provide advanced technologies to meet the necessary requirements for faculty to conduct high-quality research on food production, food safety, crop production, pest management, harvesting, processing, storage and animal industries.
- An accountable system will be staffed by highly trained technicians working to support research projects of faculty and graduate students to consistently produce reliable data for applied research while tracking project inputs and outcomes.
- An efficient system will enhance communications and strengthen partnerships between the managing entities to maintain a focus on advancing research in support of agriculture and agribusiness.
- An effective research system will provide new technologies and unbiased, credible information for outreach to both growers and the public, benefiting our state's economy and our citizens' quality of life.



## BACKGROUND: HISTORY OF THE RESEARCH STATION SYSTEM

The agricultural research system in North Carolina dates to 1877, when state legislation established the North Carolina Department of Agriculture along with the “Experiment Stations” as a division of the department. Since 1912, NCDA&CS and NCSU have worked together to coordinate and manage research station projects and facilities. While NC A&T has maintained a University Farm at various locations since 1904, NC A&T faculty have increased participation in cooperative projects within the agricultural research stations system during the past 15-20 years.

The operation of the research stations has been handled through a Memorandum of Understanding entered into in 1938 between the College of Agriculture and Life Sciences at NCSU and NCDA&CS. (NC A&T was not a party to the original document.) Per the memorandum, the research work on the research stations, in laboratories and elsewhere, is under the control of the director of the Experiment Station (now called the North Carolina Agricultural Research Service). The director shall have an assistant director, acceptable to both agencies, who shall be called the director of Test Farms (Research Stations). The Research Stations Division is responsible for maintaining the stations and taking care of infrastructure and manpower necessary to support research. The university is to provide project leaders and technical staff to develop, implement and conduct research. Funding for all stations is to be provided by both NCDA&CS and NCSU.



Fifteen research stations were purchased over the years, beginning with the Upper Coastal Plain Research Station at Rocky Mount in 1902. Each research station location was selected based on specific criteria, such as soil type, climatic conditions, geographic location and goal specific requirements. Stations can be grouped into three basic research categories: field crops, horticultural crops and livestock/poultry. Over time, each station has diversified to include more than a single area of research. Additional areas of research include aquaculture, Christmas trees, forestry, ornamentals, fruit crops, vegetable crops, herbs, specialty crops and pest management.



In 1974, the State Farm properties, 13 at the time, were transferred from the North Carolina Department of Corrections, Department of Health and Human Services and Juvenile Justice Department to the North Carolina Department of Agriculture’s Food Distribution Division. In 1986, 11 of these properties, which included four operational locations and seven additional properties, were transferred to the NCDA&CS Research Stations Division. At the time of the transfer, the purpose of the State Farms was expanded from production of food and fiber for state institutions to include research, teaching and

demonstration in agriculture and forestry. Since that time, the Broughton Farm at Morganton has closed, leaving facilities at Butner (Umstead Farm), Goldsboro (Cherry Farm) and Kinston (Caswell Farm).

In 1994, with the dedication of the Cherry Farm as the Center for Environmental Farming Systems (CEFS), NCDA&CS and NCSU committed to transition the remaining three operational farms to focus on large-scale agricultural research rather than on field crop production. The transition of the Cherry Research Farm resulted in extensive use of these facilities to expand research on sustainable agriculture and to develop infrastructure improvements for related teaching and extension activities. NC A&T joined in partnership with NCSU and NCDA&CS with specific focus on the Small Farms Unit at CEFS. By early 2000 the transitions at the remaining three locations had progressed to the point that the names of the state farms were changed to research farms to reflect the change in operations.

The latest property acquisitions were 63 acres in 2004 at the Cherry Research Farm in Goldsboro, 129 acres in 2005 at the Upper Piedmont Research Station in Reidsville and 101 acres in 2005 at the Mountain Horticultural Crops Research Station at Mills River. The Research Stations Division currently comprises nine NCDA&CS research stations, six NCSU research stations, three NCDA&CS research farms and five additional NCDA&CS properties (forest tracts). The total land base managed by the Research Stations Division has declined from 24,282 acres in 1990 to 19,157 acres today. These 5,000 acres of agricultural land have been lost to a range of uses, including reallocation to other state agencies, road rights-of-way, land sales and swaps, etc. *(Please see Appendix I, Research Station System Acreage.)*



In 2004, a systematic review was initiated to evaluate the dairy facilities across the Research Station System. A four-person review team made up of dairy experts from universities in the Southeast conducted the review. The team was provided with data compiled from each of the state-owned dairies, including budgets, receipts, ongoing research and herd health. The team prepared a written report that included recommendations for improving North Carolina's dairy research facilities. The report recommended closure of the dairy operations at the Umstead and Caswell research farms. These recommendations

were followed; the dairy herds were sold at public auction, with the proceeds retained to update the dairy facilities at the Piedmont Research Station in Salisbury.

Closure of the two dairy operations prompted additional evaluation of facilities and management, resulting in changes to the structure of the Research Stations Division. Closure of the Umstead dairy — along with the resulting labor force reduction — and the proximity of the Umstead Research Farm and Oxford Tobacco Research Station, allowed timely combination of these two facilities. The superintendent at Oxford oversees both operations with the assistance of the

staff at the Oxford location. When the superintendent at the Cunningham/Lower Coastal Plain Research Station in Kinston retired, this location was combined with the Caswell Research Farm, which is a short distance away. Today, one superintendent oversees both operations, and staff from each location are shared when necessary to meet program needs. Because the Caswell Farm location is funded by NCDA&CS and the Cunningham and Lower Coastal Plain locations are funded by NCSU, the superintendent position is jointly funded by both agencies. With these changes, there are now just 16 superintendents that oversee 18 physical locations. Combining management at these locations has proven to be an efficient method for streamlining operations and saving expenses.

## HISTORY OF NORTH CAROLINA A&T STATE UNIVERSITY FARM

Under the direction of College President James B. Dudley, the original University Farm was purchased in 1904 for the sum of \$5,000. It was located near the site where the Richard B. Harrison auditorium now stands on campus. The 100-acre farm included a brickyard, a dairy, greenhouses for the sale of floral designs, a blacksmith shop, shoe shop, tin shop and cabinet shop. The farm was well-equipped, with several kinds of ploughs, harrows, cultivators, a seed drill with fertilizers and grass seed attachments, a corn drill with fertilizer attachment, a corn harvester and various tools and machinery for market gardening. There was a 92-ton silo filled each year with corn silage, which was cut in the field with a corn harvester and cut up for the silo with a St. Albans shredder. During the summer, in connection with the canning shop, which made its own cans, provisions were made to preserve in marketable form all the vegetables that were not sold. The dairy building and apparatus used for instructional purposes were used also by the Department of Industries for the separation and bottling of milk for market and for manufacturing butter and cheese. The college had a herd of 38 cattle. The dairy made butter with equipment such as a United States cream separator, seven Acme Level butter workers, an Eclipse refrigerator, a Boyd cream ripening vat and a Babcock milk test machine.

The piggery was well-equipped and modern and was stocked with pure-bred and grade A Berkshires and Poland-China hogs. Instruction was also given in botany and greenhouse management, while market gardening was carried on for the purpose of giving the students practice in the management of such a business.

The college was also proud of its greenhouses. One was used for “forcing” (causing plants to grow faster) a variety of flowers, such as roses, hyacinths, ferns, narcissus, palms and other rare plants. Another was used exclusively for the forcing of carnations for market, while a third was used for forcing early vegetables. The farm was relocated in the early 1940s to a site on East Market Street, where the P. Lorillard tobacco processing plant is now. At that time, the farm contained 189 acres. Lorillard began buying pieces of the 700-acre farm from A&T in 1952, acquiring 76 acres in that year. During the 1940s, A&T purchased several family farms southeast of the Market Street site. The first



broiler and turkey houses were built on that property in 1949. Many farm structures were constructed in the early 1950s on the new property, including manure houses, lounging and milking barns, etc.

The new farms were located on McConnell Road, the site of the present-day 600-acre farm. Most of the current facilities were rebuilt or refurbished recently.

## **BUDGET OVERVIEW**

The Research Station System, consisting of the 18 research stations (NCDA&CS and NCSU) and the NC A&T Farm, employs a total of 253 employees across 18 counties. Additionally, approximately 250 university faculty (primarily NCSU) conduct research directly at the sites or from the system's harvested products.

Total expenditures for all research facilities in FY 2007-08 were \$17 million, with approximately 82 percent coming from state appropriations. The remaining 18 percent were generated through the sale of excess commodities. *(Please see Appendix II, Budget Overview.)*

Over the last five years the system has seen small growth in state appropriations, largely driven by legislative salary increases. As the system's overall budget is tied closely to personnel costs, which are 64 percent of the system total budget, salary increases have a significant impact on the total amount of funding available for operating.

With increased commodity pricing, receipts generated by the 12 NCDA&CS research stations appeared to be on the rise in FY 2007-08. This also was in part due to NCSU's allowance of commodity receipts generated on the six NCSU research stations to be used for station operation in FY 2007-08. However, total receipt levels have historically struggled to realize budgeted levels due to rising input costs and declining production related to factors such as combining dairy facilities, changes in the tobacco and peanut programs and weather events. As the 12 NCDA&CS stations rely on receipts to meet budget obligations, fluctuations in their level have resulted in past budget shortfalls.

An estimated \$7.4 million in grant support is awarded through competitive processes (national panels, commodity associations, etc.) to fund NCSU research projects in applied agricultural research. The research supported by this funding is conducted by faculty primarily on research stations, field laboratories, farms, and industry sites and in laboratories. This represents approximately 15.5 percent of the total grant funding that is awarded to support all research by faculty in the College of Agriculture and Life Sciences at NCSU each year. Through these grants, in-kind support provided by the NCSU faculty to research stations has been substantial and is important to offset some of the budget limitations. An estimated \$1.5 million of in-kind contributions, including labor, supplies, equipment, equipment repair, etc., is provided across the Research Station System each year. This is approximately 20 percent of the \$7.4 million in grants that support applied research.

## **PROGRAM EVALUATION DIVISION**

In 2007, the Program Evaluation Division of the North Carolina General Assembly was charged with conducting a study of the agricultural Research Station System, specifically the research stations, for the purpose of evaluating the current cooperative management structure and identifying inefficiencies in the overall program. The study contained three findings and four recommendations, including developing a comprehensive review process to ensure the system meets current and future needs efficiently and effectively, transferring the management of the stations from NCDA&CS to NCSU and evaluating the scientific value of seven stations where project numbers are lowest ([http://www.ncleg.net/PED/Reports/documents/Ag/Ag\\_Report.pdf](http://www.ncleg.net/PED/Reports/documents/Ag/Ag_Report.pdf)). The Program Evaluation Division also pointed out that there was no comprehensive strategic plan for the research stations. However, the legislature did not adopt the recommendations of the study but included a provision in the 2008 appropriations bill (S.L. 2008-107, Sec. 9.13) requiring the development of a strategic plan for the Research Station System.

## **STRATEGIC PLAN PROCESS**

### **Scope**

Session Law 2008-107, Section 9.13 directed the deans of the College of Agriculture and Life Sciences at NCSU and the School of Agriculture and Environmental Sciences at NC A&T, together with the Commissioner of Agriculture, to jointly study and develop a comprehensive strategic plan for the management of the agricultural research stations that are managed jointly by NCSU and NCDA&CS and the university research farm managed by NC A&T. The plan is to be submitted to the chairs of the House Agriculture Committee, the Senate Agriculture, Environment, and Natural Resources Committee, and the House and Senate Appropriations Subcommittees on Natural and Economic Resources. It is to be submitted to the legislature by May 1, 2009.

### **Methodology**

Three groups were formed to assist in the development of the strategic plan: the Strategic Planning Council, the Strategic Planning Working Group and the External Advisory Committee.

#### **Council**

Session law dictated that Commissioner Steve Troxler, Dean Johnny Wynne and Interim Dean Donald McDowell jointly study and develop a strategic plan. To aid in this process, they each appointed a representative from their organization to assist in forming a decision-making council for the strategic planning process. The council first met in Raleigh on July 29, 2008, to begin the planning process. At that time the council appointed the working group and the External Advisory Committee. Throughout the process, the council continued to work closely with the working group with input from the External Advisory Committee.

#### **Working Group**

The council identified three employees from each institution to serve on the internal working group, tasked with planning the regional and external advisory group meetings, communicating with the press and public, facilitating employee input sessions and writing the strategic plan. The working group began meeting on September 11 and

continued to meet monthly in 2008, increasing to twice-a-month meetings in 2009 to accomplish their tasks. *(Please see Appendix III for a complete membership listing.)*

### External Advisory Committee

An External Advisory Committee made up of 23 interested farmers and members of grower associations was formed to provide input into the strategic planning process. Members were nominated by the council to participate in a series of meetings that included background information and budget briefings. The committee's first meeting was September 10, 2008, in Rocky Mount. They met again in Raleigh on December 11, 2008, to discuss progress and share ideas. Their third meeting was in Statesville on March 19, 2009. The External Advisory Committee also received and reviewed a copy of the working draft of the report and provided feedback. *(Please see Appendix III and Appendix IV for a complete membership listing and calendar of events.)*

### Data Collection

Separate meetings were conducted to collect input from research station superintendents, NCSU and NC A&T faculty who conduct research on the research stations and interested members of the public.

### Research Station Superintendents Meeting

The annual meeting of research station superintendents was held September 15, 2008, in Greensboro. A large portion of the meeting was devoted to a facilitated discussion of the Research Station System. Staff from the Personal and Organizational Development team in the NCSU College of Agriculture and Life Sciences facilitated the meeting and led a discussion of the following six questions:

- What have you done cooperatively or collaboratively that is working? Why?
- What will an efficient and effective future agricultural research system look like?
- What are the challenges or things that will hinder or prevent us from achieving your vision?
- What are the opportunities or things that will be/are available to help you achieve your vision?
- What short-term (1.5 years) improvements can be made in order to move toward a state-of-the-art research system? (Include suggestions for responding to the fiscal year's budget shortfall.)
- How can we continue to strengthen the working relationship between the three partners?

Results from this facilitated discussion were then recorded and summarized before being distributed to the superintendents and the working group for comments. The key outcomes of the discussion at the meeting consisted of improving communication system wide, developing long- and short-term goals, sharing resources, and improving the budgeting process. Documentation of the meeting is available and a summary is provided as an appendix. *(Please see Appendix V – Superintendents Meeting)*

## Faculty Discussion Meetings

NCSU and NC A&T each scheduled meetings to provide faculty who conduct research on the research stations an opportunity to submit input on the Research Stations System. Both meetings were facilitated with staff (Personal and Organizational Development team at NCSU, and K. Baldwin at NC A&T) using similar questions posed to the research superintendents. Nine research faculty participated in the NC A&T meeting on December 5, 2008. *(Please see Appendix VI – NC A&T Faculty Meeting.)* Sixty-two research faculty participated in the NCSU meeting on December 16, 2008. *(Please see Appendix VII - NCSU Faculty Meeting)* A detailed report on the NCSU meeting is available on line at <http://harvest.cals.ncsu.edu/research.cfm>.

## Regional Public Meetings

From September 15, 2008, until January 14, 2009, four regional public meetings were held across the state to provide input from the public. The meetings were held in Greensboro, Plymouth, Raleigh and Waynesville, with attendance of approximately 35, 80, 25 and 140 respectively. Members of the council began each meeting with comments about the Research Station System. Sign-up sheets recorded attendance and requests to comment. From the total of 280 people participating in these meetings, about 60 people offered formal comments for the record. A member of the working group served as moderator. The audiences generally consisted of local producers, commodity association representatives and community leaders. At least one member of the External Advisory Committee attended each meeting. *(Please see Appendix VIII – Regional Public Meetings.)*

## Station Peer Reviews

The Research Stations Division developed and implemented a peer review process for conducting an internal assessment of each research station. The results of the review were focused around three goals. A schedule was developed to have teams of three superintendents from the 18 locations visit each station during January and February. Each superintendent would be involved in three station reviews as the chairperson, recorder or timekeeper. Each team would follow the same agenda during the review, which included a tour of the facility and interviews conducted with the manager, unit managers, office assistant and staff. A summary sheet was provided for the review team to complete. The following information was requested:

- Identify ways to save resources or improve infrastructure
- List strengths and how they support research
- List areas for improvement
- Give general impression
- List areas of concern

Additionally, project leaders and local county Cooperative Extension staff were provided an opportunity to submit comments prior to the station review about stations on which they work for the review team to consider. The summary sheets and comments were provided to the division director seven days after the station visit. The review process was followed by a meeting on March 11, 2009, to compile and prioritize findings *(Please see Appendix IX – Station Peer Review - Goals and Outcomes.)*

## **AGRICULTURAL RESEARCH AND RESEARCH STATIONS: CULTIVATING KNOWLEDGE AND TECHNOLOGY TO SUSTAIN A STRONG AGRICULTURAL ECONOMY**

Agricultural research has produced new knowledge and technologies that have been adopted in North Carolina and around the world. North Carolina's agricultural research stations have historically played an integral role in producing research by the land-grant universities that has made the state's farms and agricultural industries more productive. Faculty from the College of Agriculture and Life Sciences at NCSU and the School of Agriculture and Environmental Sciences at NC A&T, supported by staff from NCDA&CS, have developed a reputation as world leaders in agricultural research that supports our farmers and related agribusinesses. The joint management of our research stations system is committed to developing and maintaining the essential resources for agricultural research now and into the future.

Agricultural research is the catalyst for growth in the agricultural economy — an economy that benefits not only producers, but consumers alike. Research conducted on agricultural research stations is a vital component to the overall university research system. Public research conducted by faculty on research stations is important, providing an unbiased, credible source of information that can be depended upon by not only the agricultural industries but also all other industries. In order to cultivate the knowledge and technology necessary to sustain a strong agricultural economy, North Carolina must invest in agricultural research.

*Research and development is the lifeblood of agriculture and other industries. We are blessed in the United States with the creation of the university land-grant system, which played a major role in the development of modern agricultural practices through research. That role continues today, and if we are to maintain our supremacy in world agriculture, new technology needs to continue to evolve through all avenues including the land-grant institutions. Over 30 of the 94 agriculturally related organizations in North Carolina recognize the value of research to their industries and confirm its value and importance through direct financial support of these College of Agriculture and Life Sciences research programs. Support such as this will be even more important in the future as public support of these programs diminishes. (T. Monaco, Commodity Liaison and assistant to the dean, College of Agriculture and Life Sciences, NCSU.)*

The knowledge and technology developed through research will 1) improve the productivity, profitability and sustainability of industries in agriculture and the life sciences; 2) conserve and improve the state's natural resources and environment; 3) improve the health, well-being and quality of life of North Carolina citizens; and 4) provide the unbiased, science base information for extension programs.

### **Improving productivity, profitability and sustainability of industries in agriculture and the life sciences**

North Carolina's top industry is agriculture — an industry that has seen many sectors recently suffer with stagnant commodity prices, while the costs of fuel and other inputs

have continued to rise. Future financial success will hinge on increasing productivity and production, developing new markets for specialized and value-added products, and creating new bio-based technologies that provide new opportunities for farmers. Steps to success will vary based on farm size, climate and topography.

There is no doubt that research conducted by the land-grant universities of North Carolina on research stations has been beneficial to North Carolina citizens. In fact, commodity associations and others have estimated that the contribution from research is valued at millions of dollars per year (tobacco, over \$600 million; blueberries, over \$30 million; soybeans, over \$225 million; turf, over \$2 billion). Commodity organizations have also indicated that the future of many of their industries depends on research findings of faculty working on research stations. Important priorities for research are listed below. Research projects that support these priorities are conducted on research stations by faculty from NCSU and NC A&T.



- Innovation in production systems and strategies for agricultural crops that add global competitive advantages to N.C. agricultural industries
- Organic crop production
- Applying and exploiting genomics in plant and microbial systems
- Plant breeding and applied genetics
- Aquaculture, fisheries and livestock biology and genomics
- Integrated crop protection systems, including weed, insect and disease management
- Value-added agriculture, encompassing traditional crops with high-value traits (high or unique proteins), post-harvest enhancements, nutraceuticals, bioprocessing and biofuels
- Horticultural crops including ornamentals, small fruits, vegetables and turfgrass
- Food quality, safety and security
- Animal nutrition
- Sustainable farming systems
- Ecology and animal welfare
- Conservation of natural resources including air, water, soil, habitat, natural systems and animal waste management
- Health and well-being

North Carolina has been and continues to be a leader in supporting biotechnology. Since November 2008, the North Carolina Biotechnology Center has been coordinating a new strategic project of statewide partners called “Growing North Carolina’s AgBiotech

Landscape.” A 34-member steering committee and six working groups are meeting to shape long-term strategies and plans for the future of agriculture.

Agricultural biotechnology has played an increasing role in our recent progress toward improving farm productivity, profitability and sustainability. It also has significant potential to add value to existing products, improve nutrition and yield new products. Through the years, the Research Station System has been a major contributor to these developments by providing management and oversight of regulated field tests. The necessary procedures to plan and manage 39 biotechnology projects, including field permits for university faculty studying cotton, tobacco, corn, rice, potatoes, tall fescue and black cottonwood trees are currently underway. These field tests are being conducted at three research greenhouse locations, eight research stations, one university field lab and several private farms.



Plans are also underway for new support to expand research and demonstration plots for energy crops for biofuels research. The Biofuels Center of North Carolina has indicated plans that will require land and technical assistance to plant 12 energy crops at nine research station locations between now and 2010. In addition, the center anticipates planting 10 tree species at seven locations from now through 2013. Detailed plans and necessary protocols are in development.

A vibrant agricultural Research Station System contributes to:

- Expanding market opportunities through the development of new agricultural products and technologies;
- Developing systems and technologies to expand bio-based research, including renewable energy crops;
- Promoting and further developing sustainable (conventional, organic, reduced tillage) agriculture production;
- Continued participation in the strategic project called “Growing North Carolina’s AgBiotech Landscape.”

### Conserving and improving the state’s natural resources and environment

Food security problems, including famine and malnutrition, occur in regions with high population growth rates and with farming methods that are inefficient and unproductive. As the world population increases toward a projected 12 billion in 2050, our continued ability to produce sufficient food and fiber depends on progressive increases in crop productivity per unit land area. Under increasing production pressure, conservation of our limited natural resources and protection of the quality of our environment can only occur with continued advances in and adoption of agricultural technologies. Our state has lost

more than 600,000 acres of farm land since 2002. Therefore, protecting the environment and the quantity and quality of our natural resources is essential for meeting future demands for food and fiber and ensuring world food security.

North Carolina’s natural resources and climate enable diverse and productive agriculture and forestry systems; however, current and projected urban and suburban growth places considerable pressure on natural resources and the environment. Therefore, sustaining and/or increasing agricultural and forestry production must occur on a declining land resource base. In addition, the public expects agricultural and forestry enterprises to maintain environmental quality and adopt new production technologies and/or environmental protection practices to enhance degraded soil, water or air resources. Therefore, it is essential that agricultural technologies be developed that can enhance agricultural productivity and profitability while maintaining the quality of our soil, water and air resources.



Research stations provide researchers with the opportunity to address many environmental issues in the state. For example, stations host long-term soil studies. These studies provide information that can only be generated by a system that has long-term support. The opportunity to study water runoff and riparian buffers and their effectiveness in protecting our rivers and streams is also provided by the Research Station System. Animal facilities offer opportunities to work on waste management and air quality. In addition, the Research Station System protects and preserves farmland, improving the environment for the communities in which stations are located.

### Improving the health, well-being and quality of life of North Carolinians

The Research Station System provides researchers the opportunity to develop cultural practices for producing a wide variety of fresh fruits and vegetables, which are critical to good health. At the same time, fruit and vegetable production often goes hand-in-hand with the development of local markets. And the economic development that results from sales of locally grown produce benefits not only producers but the public at large. In addition, research that is conducted by faculty on research stations and that focuses on safe agricultural practices can provide a scientific basis for ensuring a safe food supply.

An emerging trend in agriculture is the creation of community based food systems. In these systems, small-scale producers supply fruit, vegetable and livestock products

to local markets, commonly through direct sales to consumers at farmers' markets. These systems have many benefits, among them higher-quality products, preservation of farmland, reduced transportation (energy) costs and local economic development. The Research Station System can support these systems by providing the opportunity for research and extension faculty to conduct research and demonstration projects that are scale-appropriate, meet the needs of producers and consumers participating in these systems and investigate resource conservation practices necessary for ecosystem maintenance and enhancement. In addition, high-value ornamental horticultural crops are the subject of important research by faculty on the research stations.

As we look to the future, research on agricultural research stations will contribute to:

- the development of new and practical technologies to ensure the production and delivery of a safe food supply;
- development of a statewide local food network; and
- a thriving green industry.

### Supporting rural development

Agricultural research by land grant universities in cooperation with local communities, farmers, growers and educators through extension has quick and tangible economic benefits in rural areas. Agricultural research pays, both in general and economic well-being, and has significant impact on the common good (A. Levine, dean at the University of Minnesota, Washington Times, 2009). Economists place the benefit-cost ratio for agricultural research at 10 to 1, adding that in the United States, \$1 of research investment today will generate a stream of future benefits equivalent to an immediate dividend of \$20 or more. Agricultural research can support rural development in a number of ways. Research findings often lead to more local jobs, new crop and animal enterprises, new industries moving into the state or community and increased community growth. North Carolina presently has three regional consortia, i.e., small fruits, apples and grapes, which have benefited from involvement with NCSU and the Research Station System.

### GOALS

Agricultural research has produced new knowledge and technologies that have been adopted in North Carolina and around the world. North Carolina's agricultural research stations have historically played an integral role in producing research by the land grant universities that has made the state's farms and agricultural industries more productive. Faculty from the College of Agriculture and Life Sciences at NCSU and the School of Agriculture and Environmental Sciences at NC A&T, supported by staff from NCDA&CS, have developed a reputation as world leaders in



agricultural research that supports our farmers and related agribusinesses. The joint management of our Research Station System is committed to developing and maintaining the essential resources for agricultural research now and into the future. Specific goals and objectives for our strategic plan follow.

### **Goal 1. Enhance infrastructure for high-quality applied agricultural research**

Managing research stations on which agriculture research is conducted is a core mission of North Carolina’s Research Stations Division. For the research stations system to support the agriculture industry successfully, station infrastructure must be continually updated to support research needs. Without access to current technology, it is extremely difficult to demonstrate to growers methods of becoming more efficient and profitable. Additionally, research on stations should demonstrate methods of protecting and conserving natural and renewable resources.

#### **Objective 1.1**

**Adopt innovative technologies and strategies to improve energy efficiency and conserve resources**



A primary objective of the Research Station System is to provide a platform for agricultural research by university faculty. In order to meet the needs of researchers and to provide growers with the best information to improve their operations, research stations should be leading the agricultural community in the use of new technology. At present, budget cuts and purchasing restrictions have put the research stations behind growers in the use of new technologies. Identifying and securing funding sources will be essential to meet needs in a timely manner.

The research stations system needs resources such as digital maps and equipment that can improve field applications of fertilizers and chemicals. Use of Global Positioning System (GPS) equipment on tractors can reduce chemical and fertilizer applications, resulting in reduced spending and efficient use of materials. Yield monitors on combines and tractors can collect data and enhance record maintenance of each location. Incorporating field data on existing digital maps provides the ability to maintain an accurate record of annual activities and research projects that can be used as an archive for future projects.

Effective communication both onsite and between station staff, researchers and administration is essential if research stations are to operate as efficiently as possible. Technology is being employed to enhance communication, but we can do better. All the research stations have broadband connections for high-speed Internet access and email. All station offices are equipped with networking systems that allow information

sharing between staff. Additionally, each station has the ability to establish a wireless networking system. Some locations, such as the Piedmont, Mountain Horticultural Crops and Tidewater research stations, have wireless bridge systems that provide Internet access to remote buildings and areas. Additional funding and support are needed to make the best use of wireless networking capabilities.

In addition to improving field activities, research station staff are working to become more energy efficient to comply with the state mandate of reducing energy consumption 20 percent by 2010.

The Research Stations Division is assessing and tracking energy usage at all locations. Stations are already using solar energy to power electric fences, livestock watering systems and small greenhouses. Larger greenhouses used for development of new varieties and transgenic plants need updated systems to improve efficiency and reduce the strain placed on station budgets. The research stations should set an example for farmers in energy conservation, an issue that is becoming increasingly important.



### **Action Items**

#### **1. Identify and prioritize technology and equipment necessary to support research**

Global Information Systems (GIS) and GPS technology are needed for field mapping, field applications and record keeping. The initial cost to acquire software licenses and provide training for appropriate station staff is \$15,000. With the initial components in place, stations can move forward in purchasing equipment such as light bars, yield monitors and auto-steer controls for tractors.

While stations have already taken steps to improve energy efficiency, such as using solar energy, more can be done. An extensive study of all stations is needed to identify areas where solar energy can improve energy efficiencies. The North Carolina Solar Center can conduct such a study for \$18,000.

Additional greenhouse space, employing the latest greenhouse technology, is needed to support research on new crop varieties and transgenic plant development. One such greenhouse is now planned, at the Tidewater Research Station. The estimated cost for design and construction of this new greenhouse is \$750,000. Funding, which is to come from station timber receipts, was approved during the 2008 legislative session.

## **2. Secure funding for upgrading equipment and adopting new technologies on a regular basis**

Research stations will continuously need modern facilities and equipment with advanced technology to conduct field studies. The stations can and should provide the lead in demonstrating innovative systems and implementing production practices and technologies that may not be currently available to producers involved in production agriculture. Advances in the agriculture industry will generate opportunities and the necessity for research stations to implement new procedures. Current funding is not adequate to support new technologies and updated facilities. The 2009-2010 equipment and vehicle-purchasing schedule submitted to NCSU and NCDA&CS put the cost of replacing equipment at \$3,605,000.



The Research Stations Division has begun using grant funding, timber receipts and special funds to supplement appropriated dollars. The Research Stations Division has been provided \$1,350,000 from timber receipts; \$900,000 from grant funding and \$676,259 from the 2004 Dairy Review to support upgrading current research station infrastructure. Without this funding, the stations would not have been able to upgrade greenhouses, expand water supply sources, improve irrigation, purchase equipment and modernize the dairy facility at the Piedmont Research Station. The Research Stations Division must have the ability to use these alternative funding sources to enhance research station programs.

## **3. Conduct energy audits to identify potential savings**

Energy audits ranging from simple to intensive can provide a long list of recommendations for cutting energy use. Local utility companies have conducted simple walk-through audits at several research stations. As time and funding allow, recommendations such as installing insulated jackets for water heaters will be implemented. The division is currently looking into options for funding intensive energy audits at each of the research stations at an estimated cost of \$50,000.

An energy audit was conducted at the Cherry Research Farm during the fall and winter of 2006-07 by the National Center for Appropriate Technology (NCAT). The audit identified 21 energy conservation opportunities. A survey was also conducted to evaluate renewable energy possibilities that could potentially be demonstrated on the station. Utility invoices and purchases of fuel, gasoline, propane and water from the previous three years were requested. Findings were placed into three broad categories: a) those with relatively short payback, less than five years, b) those with somewhat longer payback, five to 15 years, and c) those with relatively long payback of greater than 15 years. The report suggested that if all the energy conservation opportunities were immediately implemented, annual

savings of up to \$6,000 could potentially be realized. Cherry Research Farm prioritized the opportunities and implemented those that provided the quickest payback and had the most impact on the energy budget. To date, 10 of the recommended energy saving opportunities have been implemented, with five more being started or in the planning stages.

#### **4. Conserve natural and renewable resources: biofuels and water use strategies**

With increasing demands on agricultural resources and decreases in available farmland, the need to conserve resources is rising. Research stations are adjusting program focuses to address concerns about both fuel and water consumption.

##### Biofuels

Beginning in 2004 the Research Stations Division was awarded a grant by the Tobacco Trust Fund Commission to educate communities about the benefits of using biodiesel through hands-on experiences at the stations. The grant supported the transitioning of all research stations to biodiesel use. A second goal was the construction of bioprocessing units, one at the Piedmont Research Station in Salisbury and one at the Cherry Research Farm in Goldsboro. These units are to produce biodiesel fuel to meet the needs of the whole division. A large processing unit was planned for the Cherry Research Farm, but with the location of the Biofuels Center of North Carolina at the Oxford Tobacco Research Station in Oxford, this processing unit was relocated. Once the processor is fully functional, the waste oil from the State Fair will be converted to biodiesel for use within the research stations system.

The Oxford Tobacco Research Station, the Umstead Research Farm and the Williamsdale Farm Agricultural Extension and Research Facility in Duplin County are important components in the development of the state's biofuels initiative. Each location will focus research efforts in the areas of biofuels crops for production of both biodiesel and ethanol. Collaboration with the Biofuels Center to support a comprehensive long-term plan for the North Carolina Biofuels Campus on the Oxford Tobacco Research Station is in progress. The development of a long-range plan for the Oxford Tobacco Research Station has been proposed, and its completion will be vital to the overall success of the state's biofuels initiative.

##### Water Use Strategies

Water is essential to all aspects of research operations, with each station having specific needs and requirements related to everyday operations and implementation of research projects. Water is used daily for irrigation of crops, both in the field and in greenhouses, caring for animals to include watering and cleaning of facilities, for maintaining landscapes around the station, for maintaining equipment and for the health and well-being of



station staff. Protecting this resource is key to the continuation of station programs. The recent drought has made everyone more aware of the need to protect and conserve this valuable resource.

Irrigation is essential and is handled in a variety of ways throughout the Research Station System, using either wells or ponds. The use of overhead irrigation systems has become the standard practice at most locations. However, with many horticultural crops, especially crops grown in plasticulture, drip irrigation must be used for proper crop production. In addition, some crops must be drip-irrigated because of food safety concerns. Drip irrigation allows for more efficient use of water resources and reduces food safety concerns because it limits crop contact with surface water. Filtration equipment is being tested to enhance drip irrigation systems on the research stations. Additionally, methods will be adopted to monitor and efficiently manage irrigation applications to grow crops involved in research projects.

Stations are also beginning, with funding from the Tobacco Trust Fund Commission, to develop a comprehensive program to implement Good Agricultural Practices (GAPs) for growing and harvesting horticultural crops. This program, being developed in conjunction with the Food Safety Task Force involving NCSU and NC A&T, will include guidelines that address water quality as well as microbial food safety hazards and practices common to growing, harvesting, washing, sorting, packing and transporting most fruits and vegetables sold to consumers. This comprehensive program will focus on creating or modifying standard operating procedures used on the research stations to reduce the risk of food-borne illnesses, a cause of great concern to today's consumer.

##### **5. Develop a comprehensive land use system**

Land is in short supply on many of the research stations, making it difficult to rotate crops properly. A two- to three-year rotation is desired for optimum production of most crops, but stations that are heavily used have limited or no rotation. With limited or no crop rotations, variability in research results may occur, making the results less reliable. A two- to three-year rotation also reduces the risk of pest or pesticide carryover to research plots, which can result in loss of research projects. The research stations should set an example for good agricultural practices and should be following proper production practices at least to the level of our most progressive growers.

The Research Station System will evaluate ongoing activities and manage land resources to improve the quality of research. Station and project leaders will work cooperatively to develop a crop rotation program across the system. A crop rotation program that includes more than one location has the potential to better utilize existing land resources and improve the quality of research.

Approximately 25 percent to 30 percent of applied research by faculty is conducted on grower farms. NCSU and NC A&T will continue to encourage this activity as appropriate or necessary to lessen the demands for land on research stations and to allow more crop rotation and subsequent increase in research quality on research stations.

## Objective 1.2

### Recruit, retain, train a high-quality workforce; improve staffing levels to meet research needs

A high-quality workforce on the research stations is critical to help researchers establish and maintain research studies. Staffing needs within the research station program have shifted over time, with changes in agriculture and agricultural research programs. Originally, employees needed a clear understanding of basic farming practices and the ability to operate farm equipment. While a clear understanding of basic farming practices is important, in recent years employees have been required to be knowledgeable of the most up-to-date technology and agricultural industries (plant and animal). Station staff today need to not only know how to operate equipment, but understand how it works. They benefit from having experience with changing technologies as well as changing practices. Station personnel today must be skilled professionals if they are to meet the challenges of supporting research.



An important component in retaining staff is a well-developed safety program. The Research Stations Division implemented a division-wide safety program in the early 1990s that required each station to conduct monthly safety meetings and submit monthly safety reports. In addition to the ongoing safety program, the division has begun participating in the OSHA Star Program through the N.C. Department of Labor. There are currently two NCDA&CS research stations, the Cherry Research Farm and the Border Belt Tobacco Research Station, that have been inducted into this statewide program. As time and funding allow, additional stations will be identified for participation.

#### Action Items

##### 1. Identify limitations in ability to recruit, retain and improve staffing levels

As the workforce and the job requirements change, it is becoming more difficult to retain and recruit qualified staff. The research stations are no longer located in rural areas where jobs and career potential are limited. The majority of stations are located in proximity to urban areas, where higher salaries and less physically demanding jobs are available.

Station staff are responsible for helping to implement and maintain complex research projects as laid out by research and extension faculty at NCSU and NC A&T. Employees are responsible for assisting with establishing, monitoring and harvesting research projects. If this work is not done properly, it can negatively impact years of research and result in the loss of funding sources. The work research station employees do is critical and should be compensated accordingly.



The days of employees on research stations remaining in a position or at a location for 30 years or more are rare. Today, employees are hired for entry level positions at 70-75 percent of the market rate and are required to learn new skills in a short period of time. Acquisition of new skills is not compensated, so employees use their work experience and newly attained skills to gain employment at a higher rate elsewhere. The success of the research program is dependent on retaining skilled staff.

All career-banded positions in the research stations system need to be funded to 90 percent of the market rate. The cost of this measure is \$255,000.

## **2. Implement a training program to develop a qualified workforce**

Employee training is essential to developing and maintaining a highly qualified workforce at each of the research stations. Currently, employees receive on-the-job training as the need and the opportunity arise. Unfortunately, this does not provide optimal time or practice needed to fully develop new skills. A well-developed training program that will provide consistency across the system is needed and should increase efficiency. Success rates on research studies should increase as a result of this training. Training will come at a cost that will need to be supported by all parties: NCDA&CS, NCSU and NC A&T. Funding will be required to support registration fees for classes, fees for on-site training, salary increases for employees becoming qualified as trainers or for employees who attain a specified level of training.

A proposed training program for research stations should include the following.

- Qualified station staff should conduct on-site training, following clearly defined standard operating procedures to provide consistency across the Research Station System. Training may involve employees from multiple locations to ensure a skill set that is consistent across stations.
- Training provided by university faculty (NCSU and NC A&T) and staff should be conducted in areas of their expertise (i.e., irrigation, fertility, experimental design, pest management, experiment protocol) to ensure that station staff fully understand and appreciate all aspects of research and the importance of the project protocols.
- Agricultural product company representatives should conduct training for station staff and project representatives on new equipment or technology to ensure a working knowledge of the equipment or technology, project protocols and safety. Such training will reduce errors associated with research.
- An annual meeting involving station superintendents has been on-going for 58 years. The meeting provides an opportunity for superintendents to learn about programs at other locations and new or changing research programs. This meeting will serve to assess research station staff training needs across the division, and training in certain areas will be included at the annual meeting.

- Training should be available for all employees, from superintendents and supervisors to intermediate and entry level staff.
- Training sessions for research station supervisors should be conducted and scheduled for approximately a two-day period. These sessions will provide supervisors an opportunity to share current as well as needed training at their locations. Having this information first-hand will allow stations to better coordinate training and resources while providing consistency across the division.
- The training program should include salary increases as employees complete phases successfully.



The training programs for research station employees will be implemented so that training sessions are conducted annually. All station staff will receive a minimum of two to three days of in-depth training annually. Additionally, training on specific topics will be done on an as-needed basis. The initial cost to train current station staff is estimated to be \$100,000.

**Objective 1.3**  
**Maximize funding for infrastructure development**

Funding for agricultural research stations infrastructure must be a high priority for the University System and NCSU. The Research Station System should receive an equitable share of repair and renovation funds and capital improvement projects. Research stations are state facilities that are visible to the public, and the expectation of the communities in which stations are located is that these facilities be maintained. In addition, since the facilities are off the main campus there is less access to the maintenance infrastructure at the universities. More time and costs are involved for facilities personnel to travel to the research station facilities to assess infrastructure projects. The special needs for these off-campus facilities should to be taken into account when allocating repair and renovation funds to NCSU and NC A&T.

Funding for agricultural research stations infrastructure has been a high priority for NCDA&CS. Since 2004, the NCDA&CS research stations have received more than \$3 million in repair and renovation funds for infrastructure improvements. During the difficult economic period we are now in, reductions to Research Stations Division funding should be no greater than funding reductions to other NCDA&CS divisions.

## **Action Items**

### **1. Restore in-house engineering positions**

The size and complexity of the Research Stations Division and infrastructure at each of the 18 research stations has benefited from two facility engineer positions on the division administrative staff. These two staff positions once provided a number of benefits to the research stations program. The initial advantage was having engineering staff with a background in agricultural engineering, which provided a clear understanding of station needs, as opposed to an engineer who works with urban design projects and has no agriculture background. The people in these positions had a better understanding of the purpose and needs of ongoing programs. They also understood the budget constraints that stations face and had a clear understanding of state guidelines and restrictions. Additionally, they were available for frequent on-site consultations to aid in keeping projects on track and to provide professional knowledge when problems or questions arise. Without the engineering positions, projects got off-track, have not completed in a timely manner, decisions about project concerns have been made off-site by an individual not familiar with the project, and project costs have increased because in-house design capabilities were not available. Design contractors have been hired who are familiar with agricultural operations or the procedures for submitting projects for state approval. The total cost of re-establishing the two positions (salary and benefits) is \$180,000.

### **2. Seek flexibility within the current building code for agricultural buildings so individual situations can be assessed**

While many of the structures on a research station are similar to structures found on farms, they are not considered “farm buildings” by the North Carolina Building Code, which excludes buildings “used for purposes of education and research” from the farm building designation. As a result, many of the structures on a research station may not be considered farm buildings even though they may be equivalent to what one would find on a commercial farm.

This creates undue expense because plans for non-agricultural buildings are treated differently from farm building plans and are required to meet more rigorous standards, such as requirements for disability accommodations. Plan review may be slower, costing time and money and a delay in construction. Flexibility in code interpretation to allow the farm building designation for research station structures that are to be used as farm buildings would save the state money.

## **Goal 2. Ensure efficient research station and farm management**

An efficient Research Station System is needed to more effectively utilize resources to meet the needs of researchers and to provide information and solutions to the agriculture community. An efficient system would include an updated project tracking system, which would include a project assessment tool. There is also a need to develop a system for prioritizing projects and consolidating work. Joint management necessitates a joint budgeting process that is transparent and accountable, resulting in better planning and use of resources. Resources and outcomes should be tracked to measure progress.

## Objective 2.1

### Develop better tracking process for research projects

University research faculty now use Web-based systems (Crops Online Resources System and Animal Resources Request System) to request land and animal facilities on research stations. Research project initiation begins at NCSU or NC A&T with authorization at the following levels: department head, superintendent, N.C. Agricultural Research Service director (NCSU) and Research Stations Division director (NCDA&CS). However, these systems require only limited information, allowing minimal planning for research projects and no reporting.



Facility infrastructure and equipment on research stations are limited yet in high demand. To ensure high efficiency in the use of these resources, the current systems will be updated and developed so that requests for projects will be detailed to a level that will allow the most efficient research project management.

In addition, a reporting system for research stations will be implemented that will allow a summary of research station activities. This will include a list of extension and outreach activities, teaching activities and a list of research project titles, including faculty

project leaders, and other information that will help capture significant research station activities. The cost to develop a new Web-based research project-tracking program would be \$500,000.

#### Action Items

##### 1. Define “project” for more accurate counts of research projects and other station activities

There is currently no standard definition for a project, making it difficult to accurately track the number of projects being conducted on a research station. A clear standard will help more accurately reflect what occurs on the stations.

##### 2. Refine project initiation process, including review and approval

Project initiation should include the following steps.

- Department-heads receive requests.
- Department heads or a designated colleague carefully review and evaluate all research project proposals. They should answer questions such as “What is being proposed?” and “Does the proposal fit the overall objectives of the department?”
- All available sources of project funding should be identified. This would be beneficial information for department heads. An estimate of funds that must be provided by the station would assist the station in planning.
- Establish a deadline for submission of an approved project list.

There is no deadline for submitting project requests, making it difficult for stations to plan and meet all requests. Project submission is often dictated by when the project leaders receive notification of grant funding. The use of a deadline or other methods will be evaluated to better allow for planning.

### **3. Enhance the current tracking system for crops**

The current tracking systems, known as the Crops Online Resources System (092) and the Animal Resources Request System, proceed through an established approval process. An improvement to system design would be the ability to keep up with the progress of the experiment. The present 092 forms contain very little useful information to be used by station staff in implementing a specified project. The 092s should provide enough detail for the station staff, specifically the superintendent and unit managers, to make plans for the experiment and make decisions as to cultural operations, etc. Objectives for each experiment should also be listed. In addition, Standard Operating Procedures (SOP) for growing specific crops are needed. These SOPs will allow project leaders to note any exceptions to the SOP.

Tracking system information should include the following.

- Soil characteristics, specifically pH and fertility, noting any deviation from soil testing and standard operating procedures
- Soil preparation — fall cover crop, conventional/strip till/no-till, ripped and bedded or planted flat, etc.
- Identification of responsible party — project leader or station for inputs, i.e., seed, chemical, fertilizer, etc.
- Specific details for planting — seeding rate, planting schedule
- Requirements for pre-plant or at-plant treatments — fumigants, fungicides, nematicides, insecticides, herbicides, etc.
- Irrigation needs — amount of water and frequency
- Identification of cultural practices, specifically any deviations from normal such as applications of micronutrients, plant growth regulators, etc.



### **4. Create communication process for use during the project**

Well-planned and detailed project documentation can provide the station with needed information at the initial stages of the experiment. Emails and cell phones are valuable tools in addressing issues that need immediate attention, both from the researcher and at the station level. A systematic method of communication between faculty and stations will be developed so that there is efficient research project management.

## **5. Develop project end evaluation**

A dual evaluation system is needed to assist in improving station operations. The superintendent can provide the unit managers with an evaluation of how well they managed a project. The project leader can provide an evaluation of how well the project was managed as well as any suggestions for improvement to station operations (cultural practices, pest management, etc.) and improvement to the experiment itself. Superintendents and their staff will be provided the opportunity to share concerns about projects and their implementation. Information developed at all levels will be used in the training program for research station staff, providing staff access to the latest research technology.

### **Objective 2.2**

#### **Prioritize programs and consolidate work**

Current budget constraints have made it difficult for research stations to continue supporting all the projects that are submitted on an annual basis. Station superintendents have been forced to evaluate their resources carefully, including budgets, land and staff necessary to continue implementing research projects at high-quality standards. It is becoming more important for superintendents to discuss project requirements with researchers and request that projects be downsized or that project leaders provide more support through funding and in-kind contributions. Budget constraints have made it difficult to support ongoing projects. It has become necessary to develop a method of prioritizing projects.

Because of specialized equipment, labor and facilities, it may be advantageous to designate certain stations or regions for specific types of work. This would save capital expenses. Stations could also secure equipment specific to the work they are focused on and develop staff that would be highly trained in the areas specific to particular stations. Prioritization would allow stations to become more focused while freeing up resources for programs at other stations. Prioritization would also allow for more in-depth training of station personnel in specific areas, improving staff skill levels. The goal would be to improve the success rate of projects conducted on the stations. A station review will help determine need and which stations might be best suited for work with specific commodities or groups of commodities. It is anticipated that a review would be completed within two years using an internal review team consisting of faculty, administration and station personnel. A summary report identifying program strengths, weaknesses and recommendations, including an implementation timeline and budget, will be submitted at the conclusion of each review process.

Through the approval process discussed in Objective 2.1, department heads and university administrators would be able to prioritize work based on research goals of their institutions. Efforts will be made to notify station superintendents of projects anticipated each year as soon as possible; however, notification would be dependent on grant funding.

**Action Items**

An administrative review team will evaluate station activities to determine whether certain stations should be designated for specific types of research projects. Reviews will consider whether the facilities at specific stations are adequate to support research on various agricultural commodities. In additions, reviews will consider the following specific actions.

**1. Study the possibility of combining management of the Butner Beef Field Laboratory and Umstead Research Farm to enhance beef research**

The Butner Beef Field Lab and the Umstead Research Farm are located on adjoining parcels of land in Granville and Durham counties. The infrastructure at the Butner Beef Unit and the additional land at the Umstead Research Farm provide an excellent opportunity to enhance the current beef research facilities. Combining the resources of the two locations provides the opportunity to reduce travel expenses, cut feed costs and better utilize existing forage production.

**2. Encourage the sharing of staff and resources between the Mountain Horticultural Crops Research Station at Mills River and the Mountain Research Station at Waynesville**

The Mountain Horticultural Crops Research Station at Mills River (formerly Fletcher) and the Mountain Research Station at Waynesville are located 30 miles apart. The land, labor and equipment resources at these two locations will provide the opportunity to improve and expand the program. The available resources will facilitate longer crop rotations that will improve crop growth, improved disease control and better use of labor and skills. The expended resources will allow for the development of an organic research program at the Mountain Research Station.

**3. Continue cooperative effort to provide for the field and greenhouse research needs of faculty at the North Carolina Research Campus at Kannapolis**



The North Carolina Research Campus at Kannapolis is located in proximity to the Piedmont Research Station at Salisbury, which is expanding its current small fruit (berry) research program. The Piedmont Research Station, along with the Sandhills Research Station (Jackson Springs), the Upper Mountain Research Station (Laurel Springs) and the Mountain Horticultural Crops Research Station (Mills River) have ongoing small fruit programs in caneberries (raspberries and blackberries), strawberries and blueberries. The program at the Piedmont Station is rapidly expanding with the addition of two new greenhouses provided by NCSU for use in the small fruit breeding program. The station also

works closely with faculty at Kannapolis in providing staff and expertise in managing on-site projects for these faculty.

**4. Enhance the operation of the Williamsdale Field Laboratory via the Horticultural Crops Research Station at Clinton**

The recently donated Williamsdale Farm Agricultural Extension and Research Facility located in Duplin County is within 30 minutes of the Horticultural Crops Research Station in Sampson County. The equipment and staffing resources at the newly established Williamsdale Farm have been limited as the biofuels-focused program develops. The proximity of the Horticultural Crops Research Station has provided the opportunity to utilize both staff and equipment to assist with management activities and initiation of research projects during this development stage. The proximity of the two locations will provide better use of equipment, land and labor necessary for conducting a large number of projects.

**5. Evaluate management of stations by region**

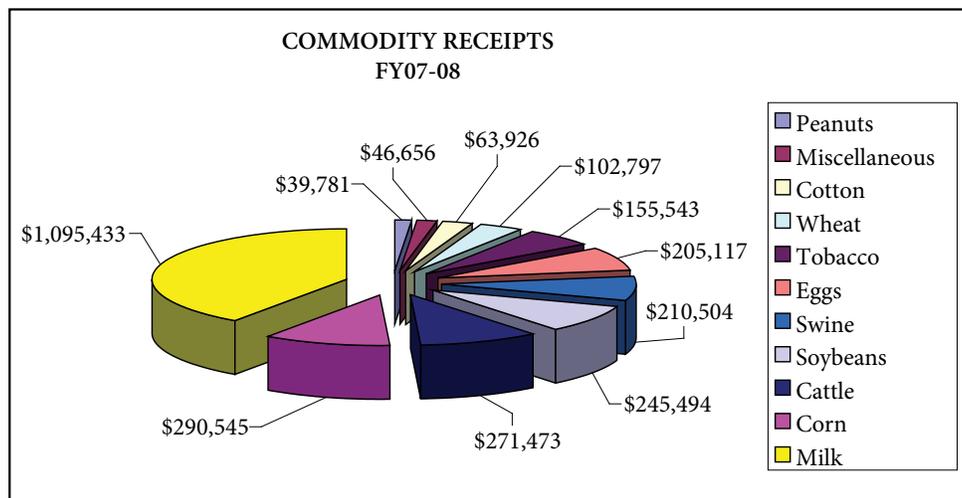
The 18 research stations can be grouped into regions that have the potential to improve efficiencies in operation, including administrative functions. The potential areas associated with station consolidation or grouping could be: Western N.C. Center at Mills River, Eastern N.C. Center at Plymouth, Piedmont N.C. Center at Salisbury, Southeastern N.C. Center at Clinton and Beef Center at Butner.

**Objective 2.3**

**Optimize resource utilization**

Research stations contain two types of limited resources that must be managed for optimal resource utilization: excess commodities and timber products. Recognizing that the primary emphasis of the research stations is to conduct agricultural research projects as identified by faculty researchers at NCSU and NCA&T, these resources must be managed in a way to complement and further research goals while providing needed financial resources.

Excess commodities are generated as a by-product of research and crop rotation. The sale of these commodities aids in recouping input costs. Proceeds are used to fund station operations and projects in the Research Station System. However, the



generation of receipts on research stations should not be at the expense of research on the station.

Harvested timber products also generate receipts used to fund capital projects. The Forest Management Program, a program within the agricultural Research Station System, currently oversees management of 9,664 acres; 6,739 acres on the 12 NCDA&CS research stations and farms and 2,924 acres on five additional properties provided to NCDA&CS as a part of a land allocation from the Department of Health and Human Services in 1974. As required by G.S. 106-22.1, these forestlands managed by the division serve many purposes, including research, demonstration and education. All forest acreage is managed using Best Management Practices (BMPs). Timber harvesting, burning, and chemical applications — where applicable — are used to improve stand quality and to enhance both plant and animal communities.

BMP activities are planned using a five-year flexible schedule — activities that are coordinated through the annual allocation of \$100,000 in real property receipts generated through the program. Examples of real property receipts include proceeds from the sale of timber and forest products and receipts generated from leases and easements on land. The remaining real property receipts are deposited in a capital account and require legislative authorization prior to expenditure per G.S 146-30(c).

### **Action Items**

#### **1. Use commodity receipts to support research station programs**

The NCDA&CS Research stations are currently required to generate receipts equivalent to approximately 21 percent of the total budget to support ongoing programs. Receipts are generated from a variety of commodities, including milk, corn, soybeans, tobacco, peanuts, eggs and horticultural crops. Livestock that are no longer needed for research also generate receipts that are placed in a “revolving fund” account that is used to purchase test animals. The Research Stations Division has been working to reduce the receipt requirement in an effort to strengthen appropriations as the demand for research acreage and inputs increase.

NCSU has the ability to place receipts generated on the six NCSU research stations in a designated line item to be used as deemed necessary. It is strongly recommended that these receipts be put back into the research stations system to support agricultural research programs in the college and improve equipment and facilities.

#### **2. Develop the program to manage timberlands and timber receipts**

Stations also have the ability to manage and harvest timber to generate receipts. These receipts should be provided to the Research Station System to support station programs. In order to maximize the management of timberlands to maximize the generation of timber receipts, the following steps will be taken.

- Timber receipts generated on the NCDA&CS stations may only be used for capital improvements after legislative approval. A change to the current statute needs to be sought to allow for the use of receipts to purchase equipment.

- Establish receipt-supported forest manager position to manage tracts. Initial management activities were provided through other state agencies, such as the N.C. Division of Forest Resources and Wildlife Resources Commission. The increasing workload of these agencies reduced the availability of personnel to meet the increasing annual management needs on NCDA&CS properties. In 1989 a forester position was created to oversee the management of all timberlands within the Research Stations Division. With changes in division organization, vendors specializing in forest management practices have been contracted to assist with management activities. With the elimination of the forester position in 2007 due to budget cuts, discussions have been ongoing to develop a new receipt-supported position, funded from the \$100,000 authorization of operational expenses from real property receipts. The Forest Management Program, in addition to generating receipts, provides locations for research, teaching and demonstration. However, these activities have been limited to only a few sites. More can be done with these lands for forestry, water quality and wildlife projects through efforts encouraging NCSU's College of Natural Resources, local community colleges and other entities to initiate projects. Cooperative agreements and easements have been developed with other agencies and groups such as the U.S. Fish and Wildlife Service, the North Carolina Museum of Natural Sciences and the N.C. Natural Heritage Program to manage and protect rare plants communities.
- Consolidate management of forest tracts. The six NCSU research stations have 745 acres of timberland that could be managed using similar guidelines but are managed through an agreement with NCSU's College of Natural Resources. This agreement requires that a portion of the sale of any harvested timber be paid to the College of Natural Resources. If the management of these tracts were to be consolidated with the NCDA&CS tracts, an overhead charge could be avoided, and receipts could be pooled for use at the stations.
- Currently less than 5 percent of the system's entire budget is devoted to purchasing new equipment for the stations each fiscal year. With the need to modernize much of the equipment on the stations, including large equipment, the system needs to devote more resources to purchase equipment. The ability to use timber receipts to augment appropriated monies would enable stations to make needed purchases. To accomplish this, a statutory change is necessary to broaden the use of timber receipts to include large equipment purchases.

#### Objective 2.4

##### Create a transparent budgeting process that is efficient and accountable

Information about the authorized budgets, receipts, costs and expenditures throughout the Research Station System can help identify areas that are not adequately funded and where cost sharing might be appropriate. Transparent budgeting will allow identification of expenditures so that the value and cost of programs can be more adequately evaluated. The certified budget authorized by the North Carolina legislature can be viewed through the Office of State Budget Web site at [http://www.osbm.state.nc.us/ncosbm/budget/certified\\_budget.shtm](http://www.osbm.state.nc.us/ncosbm/budget/certified_budget.shtm). The certified budget reports are listed as follows: Agriculture

(13700) - Research Stations Division (1190) and NCSU - Ag Research Service (16031) - Research Stations (123). The budget tracking systems are internal to each agency, but line item detail can be provided on request. The budget for the NC A&T farm is internal to that institution and could be provided on request.

**Action Items**

**1. Hold budget meetings**

To better identify and utilize the budgets allocated to the Research Station System, budget meetings involving both the College of Agriculture and Life Sciences and NCDA&CS to include administration, budget officers and research station administration should be held at least annually. The meeting should be held in July or shortly after legislative budgets have been authorized. Information to be discussed and determined at this meeting should include station operating budgets, equipment budgets, repair and renovation, capital improvements and utilization of receipt funds.

**2. Review capital project requests**

Capital improvement needs throughout the Research Station System are currently determined through discussion with individual researchers about their program needs at each location. To best support research and to strategically position the research stations to best serve research projects, a better method needs to be developed. Since management of research stations is a joint venture, NCDA&CS and NCSU staff should review capital project requests and establish priorities and funding sources prior to submission of a written request. NC A&T should be involved in ongoing discussion to avoid duplicate research efforts on their farm.

**3. Review repair and renovation funding requests**

Repair and renovation funding has been requested in the past to address safety concerns, station needs and program goals. In the future, repair and renovation funding requests should be reviewed by all entities, and priorities established prior to submission. All parties will work together to meet designated deadlines to better enable the research stations to obtain available funding.



**4. Optimize grant opportunities; create grant-writing position and grants committee**

Grants awarded to the Research Stations Division provide an alternative source of funding to support station programs. Funds are awarded or applied for to support acquisition of materials, supplies and equipment as well as to pay for temporary labor. Funds have been awarded directly to the division or as a collaborative effort with other entities, both government and private. To date, the research stations have received approximately \$1 million. Preliminary research conducted on research

stations sometimes lays the groundwork and provides data that lead to large federal grant opportunities and support.

Research stations also receive funding that matches grants secured by NCSU researchers. Matching dollars are leveraged in the form of materials, supplies and labor. Securing matching dollars through supporting proposals is possible as a result of the dual management structure of the Research Stations Division. To date the Research Stations Division has provided more than \$560,000 in matching dollars to support NCSU grants.

A position will be created that will evaluate and write proposals for grants that will support the Research Station System. At the same time, a grants committee will be created that will include the grants writer, research station staff, project leaders and other collaborators as deemed necessary. *(Detailed information on grant opportunities is provided in Appendix X.)*

## Objective 2.5

### Coordinate purchasing procedures

The Research Stations Division operates under the purchasing policies and procedures of both NCSU and NCDA&CS. Although the general procedures are similar, such as the requirement to obtain either verbal or written quotes for items that cost more than a specified amount, the specific rules vary. A consistent set of policies will aid in streamlining the procedures administration must track. Consistencies will also aid stations in providing assistance across the division.

#### **Action Items**

##### **1. Request waivers or exemptions from purchasing procedures**

The Research Station System must work under the same purchasing guidelines as other state agencies. Although the process can provide challenges, station personnel have learned to adjust purchasing needs to work within the system. Under specific circumstances, the bidding process and purchasing limitations have presented obstacles that create potential delays or greater expenditures. Waivers or exemptions from the standard purchasing procedures will benefit the overall research station program.

The research stations currently have a waiver in place to purchase animal feed to help in meeting project needs. Station feed storage is limited and replenishing supplies is required with minimal turn around so as not to jeopardize on-going research or animal well-being. The waiver allows stations to obtain bids for the feed they need and purchase based on the best price at that time. A requisition must be submitted through the proper channels.

For the 2009 planting season, stations have been granted a waiver for purchasing fertilizers, chemicals and seeds through December 31, 2009. With price fluctuations, budget restrictions and specialized needs of researchers, the division has been granted a special delegation, which is administered by the department's Purchasing Office to purchase the necessary items as needed by each station instead of having to go through

the Division of Purchase and Contract for the stations' combined requirements. The procedures remain the same, with the requirement of obtaining bids and advertising statewide based on standard purchasing limitations. This waiver allows the process to move more quickly to prevent delays in fieldwork essential to the success of projects.

The waivers that have been granted save time by reducing the time required for the bid process and save money as current market pricing is obtained. Waivers also reduce the potential of negative impacts on projects caused by delays. Obtaining these waivers for more than just a year timeframe will improve purchasing efficiencies.

## **2. Improve coordination of purchasing policies between NCSU & NCDA&CS**

The following changes will benefit the research stations.

- P-card purchases. Both agencies use p-cards to handle small purchases. The purchasing limit for NCSU is \$2,500; the limit for NCDA is \$1,500. Additionally, NCSU allows purchases with p-cards that are not allowed by NCDA, i.e., in-state gasoline, maintenance agreements and monthly services (utilities). The same P-card policies will be adopted for both organizations.
- Better Pricing. NCSU allows purchasing off state contract (with proper justification) using a “better pricing option.” Regardless of cost, NCDA&CS requires that priority be given first to Correction Enterprises, then State Term Contract for all purchases prior to purchasing on the open market. Having the ability to use the better pricing option would result in significant cost savings to the state. NCDA&CS will seek approval to change the purchasing rules to allow the better pricing option.
- Invoicing. NCSU stations receive original invoices and forward them through the division office for processing. The stations are able to resolve any invoice problems or discrepancies prior to sending invoices to the division office for payment. NCDA&CS requires that all utility and purchase order (PO) invoices be sent directly to the Accounts Payable Department for processing. Copies are forwarded to the division office after payment for distribution to the stations. Stations may be contacted to correct errors or may have to fix problems after payment. NCDA&CS will seek approval to change the purchasing rules to allow resolution of problems prior to payment.

### **Objective 2.6**

#### **Refine standard operating procedures**

Standard Operating Procedures (SOPs) for the Research Stations Division are generally site-specific and dependent on soil and climatic conditions and crop- or animal-specific. Procedures are established to provide consistencies in implementation of research projects. Consistency across the system is important for project leaders who work at multiple locations. Inconsistencies across the system may be the result of differing preferences based on knowledge of local cultural practices and tradition.

SOPs are established to ensure that crop and/or animal management are conducted according to available production knowledge. The procedures are followed to address four major objectives.



- Uniformity of management practices across locations to limit unnecessary variability in research results.
- Best Management Practices (BMPs) as recommended for each agricultural commodity.
- Review and revision of SOPs will ensure that support of research projects is being performed at the highest level and remains in step with farm and industry trends.
- Increase efficiency by reduction of variability in research projects and reduction in research project loss.

### **Action Items**

#### **1. Implement a system for developing and revising SOPs**

Uniform Standard Operating Procedures across the Research Station System will be developed that include the following.

- The BMPs for a specific commodity, i.e., tobacco, blueberry, raspberry, peaches, corn, sweet potato, soybean, cotton, peanut, etc.
- Input from station staff experienced in production of specific commodities.
- Review and input from N.C. Cooperative Extension personnel.
- Review and input from researchers to ensure that project requirements are being met.
- Published research-based N.C. Cooperative Extension recommendations.
- Comprehensive review and update of SOPs every five years to ensure that procedures remain consistent with best management practices and project requirements.

#### **2. Develop peer review teams to evaluate station operations**

A peer review process has been developed and initiated to provide periodic assessments of research station operations, to address concerns and share information. The process will continue, with each station being reviewed at least once every three years.

The review process will be expanded beyond the current team, which consists of superintendents, to include project leaders, administration and extension personnel. An assessment tool will be used to ensure that the process is consistent across the system. The assessment tool will be completed following on-site visits, which will include input from station staff, researchers and extension personnel. Each review team will submit a written report to the director of the Research Stations Division and director of the N.C. Agricultural Research Service, which will be followed up by conversations with the superintendent.

### **Goal 3. Enhance working relationships and communications**

An effective Research Station System must have high-functioning, working relationships and communications. Relationships will be strengthened with frequent exchange of ideas and information on the administrative level but should also include formal processes for conflict resolution. The strategic plan will serve as a benchmark of the current process and will be used to track improvements.

### Objective 3.1

#### Improve communication at the administrative level

During separate facilitated meetings, superintendents and faculty indicated that more communication was needed at the administrative level. Communication between the Research Stations Division and the N.C. Agricultural Research Service is critical in the current system for resources supporting the research projects to be used most efficiently. The goals of research in the College of Agriculture and Life Sciences are reached through faculty conducting research on research stations, on farm, in laboratories, at industry sites and at university field labs. While spending research station resources to support individual faculty research programs is admirable and beneficial to specific programs, resource utilization must be decided and managed based on how the resources can be used to best support faculty across the two colleges and their missions. Efficient joint management involving all three institutions is essential in the current budget climate.

#### Action Items

##### **1. Develop more open lines of communication within the Research Station System**

Communication between the directors of the two colleges, NCDA&CS administration and the director of the Research Stations Division will be increased through email (direct and copied), telephone, meetings, strategic planning to meet missions, etc.

##### **2. Expand participation in hiring administrative personnel and personnel evaluations**

The dual management of the Research Station system makes the three agencies — NCDA&CS, NCSU and NC A&T — accountable for the activities and decisions relating to stations management. It is, therefore, essential for each of the agencies to be involved and have input in the selection and evaluation of administrative personnel, specifically the division director and station superintendents. An interview team will be involved in selecting station superintendents. This process will allow input from all parties, including researchers who will work closely with a superintendent in developing a station's research program. Additionally, a Web-based system is being developed that will allow administration, department heads and researchers the opportunity to submit input for use in conducting interim and annual performance appraisals. Input from faculty and staff is essential in developing a clear picture of station activities.

##### **3. Develop an issues resolution process**

An issues resolution process will be developed to address any issues that arise. With the primary objective of stations being the support of research through infrastructure, land and labor, open lines of communication with researchers are essential. Both researchers and station staff need to develop relationships that will support open communication. The ability to quickly respond to an issue or a concern either from the station or the researcher is critical to the integrity of projects on the research stations. The quicker an issue is resolved, the more efficient and successful the system will become. At present, the tools available for communication are landlines, email and radio systems at each station. Although there are some limitations presented by this set of tools, a serious commitment from all parties will enable the system to work effectively.

## Objective 3.2

### Benchmark the strategic plan

The strategic plan can serve as a component for benchmarking the research stations system and documenting many station activities. This plan discusses what administrators, station staff, researchers and external advisors think the Research Station System should be and how to improve operations. However, one component missing is documentation of research projects.

#### Action Items

##### 1. Produce an Annual Report of Activities

To enhance research station efficiency, it will be essential to document program activities, accomplishments and recommendations annually. This information will be included in an annual report. The report will also contain updated budget information, including grant funding and receipts. The report will document resource utilization, including resource sharing within the system. Including information on current research projects at each station will produce a complete report.

The annual report will serve as a measure of strategic plan progress. It will provide all interested parties with an update on activities and station improvements. Commodity groups, local residents, local government officials and state entities will all be able to evaluate the value of the Research Station System. The report may lead to further collaborations among researchers at the two institutions and others in the UNC system.

##### 2. Evaluate strategic plan action items

The strategic plan outlines various activities and strategies designed to make the research stations system effective and efficient in meeting the state's agricultural research needs. Positive outcomes resulting from those activities reflect system successes in knowledge generated, changes in behavior of participants, enhanced efficiencies and communication, etc. Outcome measurement is essential for determining system performance. A stakeholder team will create and use an evaluation tool to measure system research station outcomes and longer-term impacts on a biennial basis.

## Objective 3.3

### Formalize Working Relationships

In order to enhance the working relationships of the agricultural research system and its partners, agreements will need to be formalized. The existing cooperative agreement between NCDA&CS and NCSU was initiated in 1938 with the development of a Memorandum of Understanding. The MOU established the roles of each agency, with NCSU developing and overseeing research and the Department of Agriculture responsible for maintenance and general upkeep of facilities. The MOU requires that all available facilities, land and other resources be available for research, with the understanding "that no experiments beyond the availability of suitable land, facilities and funds will be put out on any farm, and that the work will be developed from year to year as personnel and funds are available."

NC A&T is not currently a partner to any Memorandum of Understanding with respect to how NC A&T, NCDA&CS and NCSU will work together to provide for high-quality research within the North Carolina research stations framework. The NC A&T University Farm has only recently become a member in that association, and the superintendent of the University Farm participates as a member of the N.C. Research Stations Superintendents Group. However, operational guidance for the University Farm is placed solely under the authority of School of Agriculture and Environmental Sciences administration; in particular, the dean of the school and associate deans for research and extension. Currently, a limited number of faculty have active research projects at the NC A&T Farm, and an even smaller number of faculty participate in research activities at other stations in the system. Some NCSU faculty participate in research activities at the NC A&T Farm. Working relationships will need to be fostered to ensure full representation of the agricultural community as well as to prevent any duplication of effort among research projects.

Opportunities may exist with scientific partners outside of the agricultural Research Station System. Identifying ways to collaborate with academic partners, including those internal and external to the land grant university systems, may generate grant opportunities or circumstances that result in resource-sharing.

### **Action Items**

#### **1. Update the Memorandum of Understanding**

The current MOU has not been modified since its creation over 70 years ago and is thus outdated. To better suit the current structure of the Research Station System, revisions are necessary. The MOU will be revised to identify the roles of NCDA&CS and NCSU while including NC A&T as a partner. Guidelines on the use of the resources, personnel management and budgets will be specified as will funding of joint positions such as the division director and the superintendent position for the Kinston facilities. To better benefit the Research Station System, the MOU will be evaluated and modified every five years.

#### **2. Encourage further involvement of NC A&T faculty on stations**

There are some clearly visible opportunities for NC A&T research faculty to participate in the system, not only at the University Farm, but also at other research stations within the system. There are some obstacles to participation that were identified at a recent research faculty forum. Obstacles to participation were primarily related to time and travel. In particular, travel to the Center for Environmental Farming Systems (CEFS)/Cherry Farm was cited as problematic due to its distance from NC A&T. CEFS is the only station that hosts research projects where NC A&T faculty serve as principal investigators or co-PI. Round-trip travel time is about five hours to CEFS from the NC A&T campus. CEFS has been the primary location of NC A&T research activities because of the unique collaboration among the three aforementioned institutions that created CEFS. Because most of the research faculty at NC A&T have teaching appointments, finding the time for travel and to implement, maintain and conclude experiments is difficult.

NC A&T faculty expressed an interest at the faculty forum in research opportunities at stations closer to campus, in particular the Upper Piedmont Research Station in Reidsville. This station is approximately 30 minutes from campus. The faculty outlined some infrastructural development that would make participation easier. A primary tool that would be useful would be a manual (hard copy and on-line) that would outline procedures and protocols for initiating and implementing research projects at stations. A complementary tool would be a directory of research projects and associated faculty affiliated with each station in the system. A third tool might describe the infrastructure and geophysical characteristics of each station. Certainly, all three of these tools could be posted on the research stations Web site, increasing the accessibility to information about the system to research faculty at both institutions. If that Web site provided interactive opportunities for researchers to communicate, opportunities for individual or collaborative research projects would be enhanced. An annual research meeting might also serve as an introduction to activities at the various stations and as an opportunity for NC A&T faculty to meet, form working partnerships or otherwise collaborate with faculty from NCSU as well as superintendents and staff from the research stations network.

While there are presently few NCSU faculty participating in research at the University Farm at NC A&T, that opportunity certainly is available. The associate dean for research maintains a set of protocols for initiation of projects, and the current superintendent will entertain requests for space. Current and future projects at the University Farm would benefit from participation by NCSU faculty as co-investigators, collaborators and/or partners. The need is apparent for communication of this openness and an invitation to collaboration from NC A&T administration and faculty to facilitate this opportunity.

NCSU research faculty participated in a forum to discuss the future of the North Carolina research stations. Faculty members were asked to provide suggestions for creating opportunities for NC A&T faculty to become more engaged in collaborative research at stations throughout North Carolina. (*Please see Appendix VI.*) The thrust of the responses to the question of strengthening working relationships was in general agreement with the suggestions made by NC A&T faculty. The system would benefit by providing more opportunities for NCSU and NC A&T faculty to meet and discuss common research interests and objectives. Respective administrations should also consider opportunities for faculty to serve in adjunct faculty roles at partner institutions.

### **3. Make stations available to other universities and community colleges**

The research program within the Research Station System has always been led by research faculty at NCSU. The result is a program that is nationally known. In order to expand the current research program, partnerships with other universities and the community college system are being investigated. Currently, these relationships require involvement by an NCSU researcher. The vitaculture project initiated by Appalachian State University on the Upper Mountain Research Station is an example. Universities outside North Carolina, such as Virginia Tech, conduct joint projects at research stations, such as the CEFS program at the Cherry Research Farm. Research initiatives such as



these will be pursued, provided projects are compatible with the goals and objectives of the Research Station System.

#### **4. Define relationship with Kannapolis, university field labs, outlying field labs**

North Carolina's agricultural research program extends beyond the NCSU campus and the Research Station System. There are additional campuses and facilities that support the agricultural research initiative. Developing partnerships among all of the facilities will strengthen the overall research program while minimizing duplication.

The newly established North Carolina Research Campus at Kannapolis houses faculty from various North Carolina campuses, including NCSU. NCSU Research Campus faculty are working in a public-private partnership on the health benefits of fruits and vegetables. These faculty function like other NCSU faculty located on campus in Raleigh and have access to the Research Station System. They have already developed working relationships at the Piedmont, Sandhills and Upper Mountain research stations. A current proposal is the construction of greenhouses on the Piedmont Research Station to expand ongoing research programs. Greenhouse construction is funded through NCSU, with the Piedmont Research Station providing support through staffing, materials and utilities. As more faculty are hired, relationships with the research stations system will likely expand.

The university field labs, including several outlying field labs, are run by NCSU and serve an academic as well as a research role. Field labs are managed under a separate system, with the major goal being undergraduate and graduate education. One of the most recently developed field labs, the Williamsdale Farm Agricultural Extension and Research Facility in Duplin County, is dedicated to research, education and extension on energy and biofuels. It is currently managed as a part of the NCSU field lab system, with operational support provided by the staff at the Horticultural Crops Research Station at Clinton, only 30 minutes away. The Clinton station has provided equipment and labor to plant, manage and harvest crops. These activities would not have been possible with the limited staff at Williamsdale.

Outlying field labs share some of the same roles as outlying research stations, along with the same needs for resources and infrastructure. Efforts will be made to connect management of outlying field labs and the Research Station System to improve efficiencies and minimize duplication of resources.

#### **Goal 4. Strengthen outreach, extension and education**

A strong Research Station System requires buy-in and input from agriculture stakeholders and the general public. It is the system's responsibility to communicate and raise awareness

of the importance of research activities on the research stations. In addition to serving as the platform for agricultural research for faculty, the stations can provide educational experiences for producers and students. Stations can further serve their surrounding communities as staging areas for data collection and as partners in disaster relief efforts.

#### Objective 4.1

##### Strengthen the involvement and awareness of the agriculture community and the general public

The agricultural community has been very supportive of the Research Station System. This support has been demonstrated by grants from commodity associations for research projects and participation in field days and workshops. To gauge the thoughts and concerns of the agricultural community during the strategic planning process, an external advisory group was established. The advisory group was comprised of farmers and



members of associations interested in agriculture. The group provided input and feedback to the working group during the development of the strategic plan, and was also allowed to review and comment on the draft strategic plan prior to final submission.

The stations currently are available for workshops and training sessions for a number of agriculture-related groups. The stations are also available for tours by commodity groups, local

organization and school groups. Many of the stations participate in the Farm Bureau Ag in the Classroom program, which aims to foster a better understanding of the importance of agriculture.

#### Action Items

##### 1. Maintain an external advisory group

Maintaining the External Advisory Group will provide a level of communication between the stations and communities in a variety of ways. These could include: 1) a sounding board and a voice for agricultural research; 2) a liaison with political leaders to communicate the importance of the agricultural sector to North Carolina's economy and the system's contribution to economic growth; 3) a voice for needs of small-scale, limited-resource and socially disadvantaged producers who are generally not represented by formal grower associations; 4) a forum for the representation of the views of various interested parties relative to critical and emerging issues in agriculture such as the sustainability of rural communities and environment, energy and ecosystem services; and 5) a public relations function with respect to generating public interest in and support of agricultural research and the benefits derived from it to the general public. The External Advisory Group will meet at least annually to share information with NCDA&CS, NCSU and NC A&T. During the annual meeting, the three agencies will provide an update on the strategic plan and status of any proposed recommendations.

## 2. Increase awareness of field days and station events using local media

The research stations host field days throughout the year in conjunction with the NCSU College of Agriculture and Life Sciences to highlight research projects by university faculty. Each field day, although organized differently depending on the committee's objective, follows a program that is developed by a planning committee consisting of research and extension faculty from NCSU, research station staff (usually the superintendent) and industry members. These field days focus on research relating to a specific commodity or group of related commodities. The field days provide an opportunity for local producers and the community to visit the station and learn through presentations provided by researchers about current practices and issues related to agricultural industries. These field days are highly publicized through by NCSU, NCDA&CS, agriculture organizations and media representatives, with encouragement both to attend and to report the information disseminated.

With today's advancements, there are a variety of methods for communicating the importance of the Research Station System. The current outreach programs provide a simple method for visitors to gather on-site knowledge that can be taken home and shared with others.

Each of the stations also has a Web page that provides basic information about ongoing research and planned events. The Internet can provide a means to quickly update information and share photographs of station activities. This tool has not been used to its full potential.

Information posted on the Web pages will be used to continue the development of station brochures that can be shared at on-site events.



## 3. Expand current educational outreach activities

While the primary function of the stations is to support research, where appropriate, the use of the station for extension and research purposes will be encouraged. Local extension agents already partner with the research stations to conduct educational activities by using the stations as sites for their meetings. Both extension and the research stations could benefit through the strengthening of this relationship. The key to success for this partnership is communication to determine how each can work together more efficiently. It will be essential to include conversations with researchers to ensure that their projects are not jeopardized by any proposed activities.



#### Objective 4.2

##### Increase educational outreach to youth and students

According to 2007 data from the United States Agricultural Census, North Carolina continues to lose farmers and farmland. Only 12 percent of the state's farmers are younger than 45 and only four percent are less than 35 years of age. In addition, enrollment at land-grant universities by students pursuing majors in subject matter related to production agriculture continues to decline.

Engaging students' interest in agriculture, particularly the sons and daughters of current farmers, can help to reverse these trends and supply a new generation of farmers for the production of food for the American people as well as serve as a stimulus for enrollment in college curricula related to employment in the agricultural sector.

The research stations provide opportunities for outreach to youth for purposes of engaging them in occupations related to the agricultural sector. Outreach efforts can be targeted at many segments within this population. Interest can reach across all student age groups by providing high-quality educational opportunities for public school students through field days, field trips and associated curriculum development. Students visiting stations may not all pursue higher education or careers in agriculture; however, visits will provide opportunities to teach students where their food comes from, environmental stewardship and otherwise encourage their future support of agriculture and farming in general. Several of the stations currently participate in these types of activities through the "Discover Agriculture" educational curriculum, which is integrated with the N.C. Department of Public Instruction standard course of study.

The research stations also provide a variety of opportunities for high school students. Some stations participate in job shadowing programs that allow students to learn about a job by walking through the workday with a skilled worker. Stations also participate in high school agriculture programs like FFA by serving as training sites for judging events involving dairy, poultry and soils. Stations also hire local high school students to assist with activities during the summer, when activities are in full swing and temporary staff are essential to completing tasks.

The stations provide critical support for graduate student study at North Carolina's universities. Many students conduct research on one or more of the research stations. By working on the stations, graduate students also are provided with opportunities to discover and learn about a broad range of information, issues and conditions related to many other disciplines. Increasingly, students pursuing baccalaureate degrees are becoming engaged in research activities at stations through special projects and other opportunities included in undergraduate degree programs. This engagement builds intellectual capital and capacity in undergraduate students, better preparing them for

success in graduate programs or in the work force. Employment at research stations provides opportunities for students to earn money. In addition, some research stations such as those at Salisbury and Goldsboro host classes weekly for the NCSU College of Veterinary Medicine and thus are critical for their training in large animal medicine.

### Action Items

- 1. Collaborate with educational partners to increase agricultural education opportunities**
- 2. Maintain educational and work experiences for degree and graduate degree students**
- 3. Continue educational partnership with the NCSU College of Veterinary Medicine**

### Objective 4.3

#### Provide community information and assistance

The primary purpose of Research Station System is to support agricultural research. However, as the stations are state-owned facilities located throughout the state, opportunities arise for the stations to serve as conveyors of information and assistance within their own communities.

One example of the way research stations provides information to the community is by hosting weather stations. The State Climate Office of North Carolina at NCSU maintains a network of automated weather stations located at most of the outlying research stations. Each station and the NC A&T research farm have an on-site weather station, which is an official reporting station. Not only are the data collected important to the research activities in place at the stations (results of experiments may vary according to weather and/or be correlated with weather events), but weather information is also valued by growers and the public. Data are reported and available to the public via the Internet. Various crop reports are published on the Internet and in other media, including a newsletter and an annual report that references the data collected from these weather stations. <http://www.nc-climate.ncsu.edu/> Weather is often a predictor of pest infestation of agricultural crops and for the relative risks of initiation and occurrence of crop disease outbreaks. Many technical tools such as disease forecast models rely on this important data to make predictions, and these predictions are consistently released to the media in a timely manner.



Another example of community involvement is that of disaster relief efforts. Over the past several years North Carolina has had numerous disasters — such as hurricanes, flood and drought — that have impacted citizens. The research stations have been

available to provide assistance as needed for relief and recovery programs. Station staff and equipment are assets that are readily available to assist local communities. After hurricanes and floods, the stations have provided staff and equipment to assist in cleanup efforts. Station staff also provided assistance in collecting data needed to assess property damage and reimbursements to citizens. The stations also served as distribution locations for hay during the drought. Without the efforts of station staff, cleanup and relief efforts would have been delayed.

The locations of the research stations across the state have allowed them to provide assistance during these disaster events. The availability of station staff and equipment as needed speeds up relief efforts. In addition, all station staff have received FEMA Incident Command System (ICS) training up through level 200, with some staff receiving level 300 training to better prepare them to respond in emergency situations. The process for making decisions with respect to the balance between non-research activities and activities relating to research will be developed and covered in the SOP that will be developed.

**Action Items**

- 1. Continue to support weather stations and maintain them so they are up to date and functional.**
- 2. Support disaster relief efforts.**



## Appendix I. Research Station System Acreage

RESEARCH STATION SYSTEM  
ACREAGE INFORMATION

		ACREAGE											TOTAL <sup>4</sup>
Research Stations (NCDA&CS)	ROW CROPS	ROTATION <sup>1</sup>	HORT CROPS	PASTURE	FRUITS (small)	FRUITS (tree)	PONDS	AQUACULTURE	FORESTRY	NON-CROP <sup>2</sup>	LEASED <sup>3</sup>	TOTAL <sup>4</sup>	
Border Belt Tobacco	27.55	30.55	0.00	0.00	0.00	0.00	0.90	0.00	6.00	36.44		101.44	
Caswell Farm Unit <sup>6</sup>	154.44	660.50	0.00	0.00	0.00	0.00	0.00	0.00	467.49	37.57	39.44	1280.56	
Cherry Farm Unit	128.80	597.03	5.00	530.30	0.00	25.43	1.00	0.00	727.40	230.05		2245.01	
Horticulture Crops	22.00	51.56	81.32	0.00	2.00	0.00	6.74	0.00	99.52	86.04		349.18	
Mountain	20.13	10.83	9.06	158.69	0.00	0.50	0.50	0.00	140.65	66.89		406.75	
Oxford Tobacco <sup>6</sup>	49.64	63.24	3.00	0.00	1.25	0.00	9.55	0.00	129.32	170.44		426.44	
Peanut Belt	146.00	114.00	5.50	0.00	0.00	0.00	7.00	0.00	24.00	75.48		371.98	
Piedmont	235.00	198.00	6.00	56.00	6.00	0.00	8.00	0.00	462.20	65.00		1036.20	
Tidewater	188.89	227.32	9.00	183.70	0.00	0.00	0.00	13.00	825.42	144.44	40.44	1551.33	
Upper Coastal Plain <sup>7</sup>	220.00	26.00	1.00	7.00	0.00	0.00	16.00	0.00	100.00	71.92		441.92	
Upper Mountain	11.00	13.25	14.25	320.65	3.75	0.00	0.00	0.00	67.75	22.16		452.81	
<b>TOTAL</b>	<b>1203.45</b>	<b>1992.28</b>	<b>134.13</b>	<b>1256.34</b>	<b>13.00</b>	<b>25.43</b>	<b>49.69</b>	<b>13.00</b>	<b>3049.75</b>	<b>1006.43</b>	<b>79.88</b>	<b>8663.62</b>	
<b>Research Stations (NCSU)</b>													
Central Crops	197.13	17.00	12.40	0.00	4.60	18.00	21.30	0.00	86.00	161.00	29.20	488.23	
Horticultural Crops	0.80	12.70	16.26	0.00	47.71	0.36	3.00	0.00	7.67	22.50		111.00	
Cunningham/Lower Coastal Plain	86.30	207.73	43.00	0.00	1.50	0.00	16.00	0.00	111.00	50.00		515.53	
Mountain Horticultural Crops	23.20	11.30	51.95	71.50	5.40	35.30	3.00	0.00	67.00	123.01	14.60	377.06	
Sandhills	95.05	34.50	13.90	0.00	14.92	36.42	17.60	0.00	195.20	109.36		516.95	
Upper Piedmont	45.10	28.00	0.00	371.84	3.00	0.00	9.02	0.00	278.09	39.60	67.59	707.06	
<b>TOTAL</b>	<b>447.58</b>	<b>311.23</b>	<b>137.51</b>	<b>443.34</b>	<b>77.13</b>	<b>90.08</b>	<b>69.92</b>	<b>0.00</b>	<b>744.96</b>	<b>505.47</b>	<b>96.79</b>	<b>2715.83</b>	
<b>Research Farm (NC A&amp;T)</b>													
A&T Farm	74.00	0.00	12.00	125.00	0.00	1.00	15.00	0.00	210.00	130.00	0.00	567.00	
<b>TOTAL</b>	<b>74.00</b>	<b>0.00</b>	<b>12.00</b>	<b>125.00</b>	<b>0.00</b>	<b>1.00</b>	<b>15.00</b>	<b>0.00</b>	<b>210.00</b>	<b>130.00</b>	<b>0.00</b>	<b>567.00</b>	
<b>Forest Management (NCDA&amp;CS)</b>													
Cameron-Morrison													
Dix Farm									458.00	7.00		465.00	
Fountain Farm <sup>7</sup>		179.61							317.78	0.00		317.78	
McCain									186.13	16.00		381.74	
Samarland									1717.45	23.32		1740.77	
Umstead Farm Unit <sup>6</sup>	40.07	210.00		388.13			8.00		244.39	0.00		244.39	
<b>TOTAL</b>	<b>40.07</b>	<b>389.61</b>		<b>388.13</b>			<b>8.00</b>		<b>3690.05</b>	<b>183.30</b>		<b>4519.55</b>	
<b>TOTAL</b>	<b>1765.10</b>	<b>2693.12</b>	<b>283.64</b>	<b>2212.81</b>	<b>90.13</b>	<b>116.51</b>	<b>142.61</b>	<b>13.00</b>	<b>10618.51</b>	<b>1871.52</b>	<b>176.67</b>	<b>19615.68</b>	

1. Acres required to improve soil conditions, soil fertility, and reduce disease and pests. Research Stations use a 3-year crop rotation.
2. Acres not available for research. Includes buildings, roads, utilities, easements, field borders, riparian buffers, stream management zones, ditches, grass waterways.
3. Additional acres necessary to meet research and rotation requirements.
4. Acres deeded or allocated to the State. Does not include lease acres.
5. The Caswell Research Farm, Cunningham Research Station and Lower Coastal Plain Research Station are managed as a unit with one Superintendent and shared staffing responsibilities.
6. The Oxford Tobacco Research Station and the Umstead Research Farm are managed as a unit with one Superintendent and staff handling research activities at both locations.
7. The Upper Coastal Plain Research Station and the Fountain Farm are managed as a unit with one Superintendent and staff handling research activities at both locations.

**Appendix II – Budget Overview**

**NCDA & CS  
RESEARCH STATIONS  
FUND 13700-1190**

	<b>FY 2004-05</b>	<b>FY 2005-06</b>	<b>FY 2006-07</b>	<b>FY 2007-08</b>	<b>FY 2008-09*</b>
	Actual	Actual	Actual	Actual	Authorized
Personal Services	6,562,034	6,741,188	6,869,305	7,109,186	8,036,242
Operating Expenditures	3,796,115	3,465,528	3,973,297	4,766,410	4,492,152
<b>Total Expenditures</b>	<b>10,358,149</b>	<b>10,206,717</b>	<b>10,842,602</b>	<b>11,875,596</b>	<b>12,528,394</b>
(Revenues)	2,547,508	2,191,753	2,120,578	2,800,335	3,049,611
<b>Appropriation</b>	<b>\$7,810,642</b>	<b>\$8,014,963</b>	<b>\$8,722,024</b>	<b>\$9,075,261</b>	<b>\$9,478,783</b>

\*Authorized Budget reflects a 9% departmental reversion

**NC A&T State University  
RESEARCH FARM  
FUND**

	<b>FY 2004-05</b>	<b>FY 2005-06</b>	<b>FY 2006-07</b>	<b>FY 2007-08</b>	<b>FY 2008-09*</b>
Personal Services	268,327	328,243	338,066	363,120	392,162
Operating Expenditures	81,186	\$70,575	102,316	96,712	117,542
<b>Total Expenditures</b>	<b>\$349,513</b>	<b>\$398,817</b>	<b>\$440,382</b>	<b>\$459,832</b>	<b>\$509,704</b>
(Revenues)					
<b>Appropriation</b>					

\*Projected through 6/30/2009

**NCSU  
RESEARCH STATIONS  
FUND 16031 - PROGRAM 123**

	FY 2004-05	FY 2005-06	FY 2006-07	FY 2007-08	FY 2008-09*
Personal Services	2,842,671	2,930,398	3,192,122	3,345,273	2,250,294
Operating Expenditures	811,057	852,054	973,325	1,016,478	534,394
<b>Total Expenditures</b>	<b>3,653,728</b>	<b>3,782,452</b>	<b>4,165,447</b>	<b>4,361,751</b>	<b>2,784,688</b>
(Revenues)	267,937	164,881	143,469	184,462	191,847
<b>Allocation</b>	<b>\$3,385,791</b>	<b>\$3,617,571</b>	<b>\$4,021,978</b>	<b>\$4,177,289</b>	<b>\$2,592,841</b>

\*Expended as of 2/28/09

Revenues Utilized by Stations\*\*      \$57,056      \$23,878      \$16,992      \$132,067      \$8,315

\*\*Prior to FY 2007-08 revenues were used to support operating budget allocations; revenues utilized by stations reflect approved reimbursements to stations' operating budgets.

NOTE: Base Operating Budget Allocation for FY 2008-09 is \$1,023,866 and reflects a 3.5% cut from FY 2007-08; Current budget allocation to date (3/17/09) is \$904,196 which is approximately 87.5% of base budget and is inclusive of the \$8,315 reimbursement from receipts.

**NCSU CUNNINGHAM RESEARCH STATION  
FUND 91000 - PROGRAM 123**

	FY 2004-05	FY 2005-06	FY 2006-07	FY 2007-08	FY 2008-09*
Personal Services	142,737	129,997	127,528	121,842	89,002
Operating Expenditures	148,406	184,753	166,978	230,266	82,458
<b>Total Expenditures</b>	<b>291,143</b>	<b>314,750</b>	<b>294,506</b>	<b>352,108</b>	<b>171,460</b>
(Revenues)	93,115	93,073	114,521	96,390	134,326
<b>Allocation</b>	<b>\$198,028</b>	<b>\$221,677</b>	<b>\$179,985</b>	<b>\$255,718</b>	<b>\$31,134</b>

\*As of 2/28/09

Revenues Support Operating Budget Allocation

NOTE: Base Operating Budget Allocation for Cunningham for FY 2008-09 is \$212,300 and reflects a 3.5% cut from FY 2007-08; Current budget allocation to date (3/17/09) is \$106,150 (50% of base budget); an additional allocation was approved on 3/12/09 for \$79,612.

## Appendix III

### List of Participants

#### Strategic Planning Council

##### N.C. State University College of Agriculture and Life Sciences

Dr. Johnny C. Wynne - *Dean and Executive Director of Agricultural Programs*

Dr. Sylvia Blankenship - *Interim Director, N.C. Agricultural Research Service, Associate Dean*

##### N.C. A&T State University School of Agriculture and Environmental Sciences

Dr. Donald R. McDowell - *Interim Dean*

Dr. Ray McKinnie - *Associate Dean*

##### N.C. Department of Agriculture and Consumer Services

Steve Troxler - *Commissioner of Agriculture*

Dr. Richard C. Reich - *Assistant Commissioner for Agricultural Services*

#### Strategic Planning Working Group

##### NCSU College of Agriculture and Life Sciences

Dr. Winston Hagler - *Assistant Director, N.C. Agricultural Research Service*

Dr. David Monks - *Assistant Director, N.C. Agricultural Research Service*

Dr. Roger McCraw - *Professor, Department of Animal Science*

##### NC A&T School of Agriculture and Environmental Sciences

Mr. Leon Moses - *Farm Superintendent*

Dr. Ralph Noble - *Chairperson, Department of Animal Sciences*

Dr. Keith Baldwin - *Program Leader, Agriculture and Natural Resources*

##### NCDA&CS

Mr. Eddie Pitzer - *Director, Research Stations Division*

Ms. Debbie Robertson - *Assistant Director, Research Stations Division*

Ms. Joy Hicks - *Policy Development Analyst*

**External Advisory Committee**

David Autrey - *nurseryman, Yancey County*  
Jimmy Burch - *grower, Duplin County*  
Pete Burgess - *N.C. Farm Bureau, Vance County*  
David Davenport - *grower/agribusiness, Pitt County*  
Bob Ford - *N.C. Poultry Federation*  
Beth Foster - *grower, Washington County*  
Jimmy Gentry - *N.C. State Grange, Iredell County*  
Dr. Dan Godfrey - *Guilford County*  
Charles Hall - *N.C. Soybean Producers Association*  
Kendall Hill - *N.C. Agribusiness Council*  
Mary James - *grower, Duplin County*  
Norman Jordan, Jr. - *dairyman, Chatham County*  
Ervin Lineberger - *grower, Cleveland County*  
Kirk Mathis - *grower, Wilkes County*  
Roland McReynolds - *Carolina Farm Stewardship Association*  
Randall Patterson - *grower, Rowan County*  
Mark Peters - *nurseryman, Guilford County*  
Bud Sales - *grower, Buncombe County*  
Neal Stamey - *grower, Haywood County*  
Jeff Turner - *agribusiness, Duplin County*  
Dan Ward - *grower, Bladen County*  
Harold Webb - *Wake County*  
Harold Wright - *grower, Bladen County*

## Appendix IV

### Calendar of Events

#### Regional Public Meetings

Regional meetings were scheduled to receive public comments during the planning process.

- Sept. 15, 6:30 p.m. Guilford County Agricultural Center, 3309 Burlington Road, Greensboro
- Dec. 10, 6 p.m. Tidewater Research Station, 207 Research Station Road, Plymouth
- Dec. 16, 6 p.m. Wake County Office Park, Commons Building, 4001 Carya Drive, Raleigh
- Jan. 14, 1 p.m. Haywood County Extension Center, 589 Raccoon Road, Waynesville

#### External Advisory Committee Meetings

The following External Advisory Committee meetings were held to receive input from the agriculture community during the planning process.

- Sept, 10 – Rocky Mount
- Dec. 11 - Raleigh
- March 19 – Statesville

#### Chronological Calendar of Events

- July 8, 2008 HB 2436, the Appropriations Bill, was enacted by the Legislature
- July 15, 2008 First meeting of deans with commissioner regarding the Strategic Plan
- July 16, 2008 HB 2436 was approved and became Session Law 2008-107
- July 29, 2008 First meeting of the Strategic Planning Council
- Sept. 10, 2008 First meeting of the External Advisory Committee – Rocky Mount
- Sept. 11, 2008 First meeting of the Working Group
- Sept. 15, 2008 Research Stations Superintendents Annual Meeting – Greensboro
- Sept. 15, 2008 Regional Meeting – Guilford County Agriculture Center – 6 p.m.
- Oct. 9, 2008 Working Group meeting – 2 p.m.
- Nov. 13, 2008 Working Group meeting – 2 p.m.
- Dec. 5, 2008 NC A&T agricultural research faculty discussion meeting
- Dec. 10, 2008 Regional Meeting – Tidewater Research Station, Plymouth, NC – 6 p.m.
- Dec. 11, 2008 External Advisory Committee meeting – Raleigh – 11 a.m.
- Dec. 11, 2008 Working Group meeting – 2 p.m.
- Dec. 16, 2008 NCSU agricultural research faculty discussion meeting
- Dec. 16, 2008 Regional Meeting – Raleigh – 6 p.m.
- Jan. 13, 2009 Working Group meeting
- Jan. 14, 2009 Regional Meeting at Mountain Research Station, Waynesville
- Jan. 21, 2009 Working Group meeting
- Feb. 5, 2009 Working Group meeting
- Feb. 19, 2009 Working Group meeting
- March 5, 2009 Working Group meeting
- March 19, 2009 External Advisory Committee meeting – Statesville
- April 2, 2009 Working Group meeting
- April 9, 2009 Working Group meeting
- May 1, 2009 Strategic Plan due to the General Assembly

## Appendix V

### Superintendent Planning Meeting: Session Summary

On Monday afternoon September 15, 2008, the superintendents of the Research Stations and University Field Labs met in Greensboro for a moderated session to discuss the future of the Research Stations Division. The 4-hour session was moderated by Mitch Owen and Mary Lou Addor, with the Personal and Organizational Development Program at North Carolina State University. The group was presented with seven questions to gather information on the current status of the stations and their programs as well as provide some information on where the superintendents see the program going. The information gathered is summarized below.

What have you done cooperatively or collaboratively that is working? Why?

1. **Sharing of equipment, commodities and labor:** The stations currently share a variety of resources to make the division more efficient. Sharing of equipment across the system reduces the need for every station to purchase specialized equipment. Sharing of commodities such as transplants, feed stocks (corn and hay) and bulls for breeding reduces division costs. Sharing of labor reduces the need to hire temporary labor while providing skilled labor for special projects such as construction of tunnel houses and staffing for station events.
2. **Work together to brainstorm and exchange ideas:** Collaboration to develop uniform protocols for research at multiple sites provides consistency in research projects across the division. Sharing resources and ideas improves station and division efficiencies. Working together to develop grant proposals benefits the research program not just individual stations while reducing the strain on station operating budgets.

What will an efficient & effective future agricultural research system look like?

- 1) **Goal oriented:** Development of both long-term and short-term goals division wide before focusing on specific stations goals will help to aid in prioritizing which projects are of primary concern particularly with reduced budgets and funding.
- 2) **Relevant:** The ability to limit overlap and unnecessary duplication of efforts on stations including programs, personnel and equipment will strengthen the overall program and improve efficiencies.
- 3) **Resources:** Sharing resource across the system including budget, equipment and staff will make everyone more conscious of available resources and improve lines of communication. The ability to match resource needs across the system improves overall efficiency.
- 4) **Well-developed administrative structure:** Developing open communication and transparent operations between all parties will create a true working partnership. A clearly defined administrative structure needs to be developed, specifically NCDA&CS providing administrative management and oversight for the 18 outlying stations to include purchasing, budget, personnel, supervision and NCSU providing research oversight and management specifically Primary Investigators and determining research priorities.
- 5) **Timely solutions to agricultural problems:** Expected and actual outcomes of research

projects need to be shared with stations and staff to ensure success of the research program.

- 6) **Technology:** Stations operating with quality equipment, facilities and people to meet the research needs is key to the success and growth of the program. Not necessarily having the newest or state of the art equipment but at least equivalent to that used by local growers.
  - a) Technologically advanced: Stations need a balance of employees with agriculture skills and technology skills; encourage adoption of cutting edge technology by producers through example
  - b) More technical expertise on each station: Provide training to capable, interested personnel in computers (email, Excel, Word, land use, GIS), welding or mechanical repair; allow private companies access to station staff for training; university should provide assistance with training as they already have the expertise.

What are the challenges or things that will hinder or prevent us from achieving your vision?

1. **Lack of project and fund priorities:** Prioritizing of research projects and funding needs to be done collectively by PIs and administration. Poorly designed projects and projects that have little or no relevance to goals and visions reduce the support for viable projects.
2. **Lack of quality people:** Salaries consistently below the market rate challenge ability to recruit and train qualified personnel. Relying on inmates and temporary labor jeopardizes research projects.
3. **Lack of trust:** The situation created by the effort to gain control of all research stations has eroded the partnership at the administrative level. The partners need to be willing to compromise and commit to a single goal.
4. **Lack of adequate resources, specifically funding:** Limited resources and labor constraints can negatively impact research translating to less efficient, less effective and less timely information. Budgets are not distributed equally between NCDA and NCSU station as a result of two separate systems.
5. **Lack of goals and direction:** There is no stated vision for the Research Stations Division that provides specific goals and expectations.

What are the opportunities or things that will/are available to help you achieve your vision?

1. **Sharing resources:** The ability to track and share resources across the entire system regardless of ownership will improve efficiencies and effectiveness of the program
2. **Stronger partnerships:** Partnerships are needed with the legislature, community leaders, growers, commodity groups and a committed administration need to be encouraged. All partners need to support the overall program vision.
3. **Access to alternative funding sources:** Some project leaders provide in-kind support while others provide no support, leaving the station operating budgets to support the bulk of ongoing research. Alternative funding sources such as grants with funding specifically for the stations need to be sought. Examples of efforts that have been successful include Tobacco Trust Fund Commission grants for biodiesel conversion and brambles production.

What short-term (1.5 years) improvements can be made in order to move toward a state of the art research system? (Include suggestions for responding to the fiscal year’s budget shortfall.)

- 1. Identify available resources within the system for efficient utilization:** Develop a mechanism to identify, track and share resources within the Research Stations Division, such as seed, plants, hay, corn or other feed stocks and animals.
- 2. Upgrade infrastructure and equipment:** Funding needs to be provided to support purchasing equipment and improve infrastructure that will enhance research. PIs need to provide input on facilities and equipment to ensure that planned activities are beneficial to the program.
- 3. Prioritize research:** Current research programs need to be evaluated to assess strengths and weaknesses. NCSU administration needs to provide guidance on prioritizing projects and reducing duplication.
- 4. Clearly defined set of goals:** Clear division-wide goals need to be established and adhered to by all including parties specifically administration.
- 5. Address staffing concerns:** Develop a uniform system for training employees within the system and fill vacant positions in a timely manner.
- 6. Evaluate annual budget needs:** Stations need to provide project annual budget needs for evaluation, and administration needs to commit to meeting those budget needs. Station resources have been reduced to minimums already. Continual budget cuts erode the program, “Can’t get blood from a turnip”

How can we continue to strengthen the working relationship between the three partners?

- 1. Develop effective communication:** Communication between all parties and all levels of the program from the top to the bottom needs to be developed. Everyone needs to be willing to listen and support the goals of the program.
- 2. Provide adequate resources:** Develop a system with clearly defined roles. NCDA&CS provide administrative structure for 18 outlying stations — purchasing, budget, personnel, supervision. NCSU provides PIs and determines research priorities. Everyone agrees to provide the resources necessary to accomplish the set goals.
- 3. Improve community support:** Field Days and other station events need to be more focused to develop a stronger program. Having fields less frequently — maybe every 5 years, with involvement from the community or commodity groups in the planning process may improve the effectiveness and attendance; need to be more proactive to reach nonagricultural culture. Everyone needs to work together to share our story.
- 4. Remember social capital is as important as economic capital.**

## Appendix VI

### Facilitated Strategic Planning Session with NC A&T Faculty

December 5, 2008

C H Moore (A-8)

**Attendees:** Nine faculty members with research activities at the University Farm attended the faculty forum to discuss the Research Station System.

Dr. Baldwin (the session facilitator) opened the meeting by welcoming everyone in attendance. He proceeded to give background information to the assembled faculty with respect to the charge that the General Assembly had given to NC A&T State University, N.C. State University and the N.C. Department of Agriculture and Consumer Services. That charge was to prepare a strategic plan going forward for the N.C. research stations and the NC A&T University Farm. The strategic plan will not include the field laboratories or the educational units owned by NCSU. The strategic plan will be written by a Working Group, which will receive direction from the Strategic Planning Council and the External Advisory Committee.

Some general questions and comments from the assembled faculty were recorded. A senior research scientist stated that the University Farm has been designated as a research farm rather than a teaching and research facility. He went on to say there are concerns and issues about not having any language in place to say that teaching and research are integral to the mission of the farm. Dr. Baldwin said this is a good point and how these are the kinds of concerns and issues we will capture and discuss throughout the meeting.

The question was posed, “What should the mission of the individual research stations include?” A faculty member stated that in his experience, research programs and efforts complement academic instruction because resources are limited. Another faculty member stated that from her understanding, most experiment stations follow the land-grant mission of a three-pronged approach. They may be called experiment stations, but are used for extension, research and teaching. Dr. Baldwin added that we have many research stations and that they originally focused on the principle crops grown in and important to the respective region, but that now stations are broadening the scope of research to ascertain regional responses to standard cultural practices for important N.C. crops, among other interests.

Most agreed that it would be good if stations were differentiated by mission. For example, you have some research stations where students are not allowed to work the livestock, and so these stations may not be assigned an academic mission.

*Faculty were asked to participate in some facilitated exercises. The purpose of the exercises was to gather feedback for the strategic plan from faculty participating in research projects at the stations or at the farm. The facilitated exercises all had a similar format. A question was posed by the facilitator, the faculty were asked to write down their thoughts on sticky notes, the notes*

*were collected and a general discussion on the question followed.*

**What have you done cooperatively or collaboratively that is working?**

**An Animal Scientist:** Her farm efforts include sample collection, animal maintenance, student training, workshops and field days (staff at farm, students, and folks from NCSU), providing students with job skills and outreach. There have been problems with animals that have generated additional research questions. She has worked with Caswell Dairy Farm as a partner.

**An Animal Scientist:** This researcher has no collaborative efforts in place between the three partners. At one time he did conduct a poultry presentation at the CEFS unit, but beyond that there haven't been any collaborative agreements or any additional accomplishments. The nature of his work has changed somewhat, but he is not too involved in anything but his own research effort. However, he has always had concerns about A&T not being part of collaborations and research efforts.

**An Animal Scientist:** This researcher has collaborated with NCSU, in particular at CEFS. He has worked with Dr. Jim Green at NRCS. There are pigs on the University Farm that were brought from CEFS. He plans to hire a technician at CEFS to assist with research efforts (technicians are not always available to help him when he is there, or they are engaged in projects that aren't relevant to his research interests). He will bring additional pigs from CEFS (pigs that were kept 25-30 years antibiotic-free), as well as refurbish and bring eight auto feeders to A&T from Central Crops Research Station in Clayton.

**A Horticultural Scientist:** The extent of collaboration with the stations and University Farm is principally through the Small Farm Field Day, which serves citizens of N.C. He participated in the CEFS planning committee, which initiated the CEFS Unit.

**A Soil Scientist:** He and a colleague have collaborated on many research projects at the University Farm. The artificial wetlands research (treatment of swine effluent), report was helpful to farmers, commodity groups and other swine waste researchers, and there was a lot of cooperation between scientists and staff.

**An Animal Scientist:** She "takes her hat off to the CEFS unit." She has been invited to upcoming research planning meetings. Her perception was that there are faculty and staff throughout the state collaborating at stations. She believed that stations should be identified that are best for the research contemplated, based on past performance and geospatial advantages. A strategic plan should specifically outline who does what. She felt it would be helpful to talk to superintendents to find out pros and cons of particular research sites, so collaborators can have dialogue with superintendent and staff about what they can do and cannot do to support the work. In her opinion, A&T is doing that to some extent. It would be helpful for station staff to get together to say, "This is a problem with using this station." She suggested an annual meeting between faculty at the two universities to identify opportunities for collaboration.

**Ms. Joy Hicks (NCDA&CS):** Stated that NCDA&CS is very interested in projects with NC A&T and would like to help more and be more of a partner. She urged everyone to inform her of

any challenges NC A&T may have had working with NCDA&CS and to share any ideas or concerns.

**What will an efficient and effective future agricultural research program/system look like?**

**An Animal Scientist:** All stations should have an understanding of their purpose. We should all have a common goal (entire system) so everyone can work together, and work can be integrated. There needs to be clear policies and procedures to allow work to be done efficiently and effectively. It was hard for her to find out what was research was taking place at particular stations. Procedures for initiating and performing research at stations need to be easier to find. The researcher suggested the creation or enhancement of a Web site, which would provide information that would promote faculty collaboration between NCSU and NC A&T. It would also enhance the partnership among all three partners.

**A Horticultural Scientist:** The way the stations are presently set up, he doesn't see any balanced growth in research projects across the system. At the A&T farm, there are limits imposed on every request for assistance (in almost every aspect), and there are not enough resources available to conduct research the way we want to and should do it. Structural changes are needed to make the system effective and efficient.

**A Soil Scientist:** There are 18 stations spread out so it is hard to conduct research when you have to drive a great distance. If we had resources at our farm, we would save on energy and resources. In addition, we do not have a repair shop, which could save with conserving time and energy.

**An Animal Scientist:** He felt that more land is needed for pigs raised "on the ground," and more available, trained staff (this was a common theme — lack of staff who were trained in research principles and practices). There is only one research manager in swine unit I addition. He felt we need to separate research and teaching functions but be inclusive of both on stations and the farm. He also mentioned that CEFS wants us to participate more at that facility. Lastly, all partners need to be visible, as sometimes it is not clear who is doing what research and who potential partners might be.

**An Animal Scientist:** Stations need to be able to address evolving problems quickly. There needs to be coordination from the top to the bottom and more effort devoted to teamwork. In his opinion, we do not respond fast enough to emerging issues, nor are we equipped to do so effectively.

**An Animal Scientist:** She agreed with what everyone had said up to this point. She feels communication should be strong and good. We must identify strengths and weaknesses of each station (which would actually serve as a starting point). It would be good to know the training level of staff so you know what to expect. It is also good to know policies and procedures of each research station.

### **What are the challenges we face?**

**An Animal Scientist:** There is lack of information on research logistics (travel, how to conduct your research). Short-term improvements could be as simple as gathering information on station capabilities, developing a how to manual. He stated that joint meetings are only held a few times a year for purposes of collaboration.

**An Animal Scientist:** We have limited resources and funding (the pie is getting smaller). We will need to work together to share. In addition, depending on your appointment, the question of whether you have the time and energy to pursue opportunities and do so effectively is important. There are opportunities to develop strong teams but team efforts will need to be better than what they have been in the past. Money is needed to move toward a state-of-the art research station. In his opinion, he does not see this happening. Communication and coordination are needed to strengthen working relationships.

**An Animal Scientist:** A&T is just now receiving two acres. There are opportunities to use the 18 stations, but a coordinator is needed to “cross-talk” among the stations to strengthen relationships. A major challenge is traveling distances and time involved. CEFS is a full day trip. If students cannot go by themselves and/or no station staff is available to assist in data collection, etc., research projects are problematic. (This challenge was voiced by others, many who felt that anyone with teaching responsibilities was left out.)

**An Agricultural Engineer:** A&T farm has limited space in terms of indoor facilities. He says it is very difficult to work with physical plant (Example: it took two years for a simple procedure, resulting in loss of funding). There is a need to figure out extension priorities statewide to connect better with each other; we should focus on high priorities for researchers at the national level.

**A Soil Scientist:** Funding is a challenge. A short-term improvement would be a workshop on stations where repairs to equipment, etc. could be made. There are never representatives from all three partners at meetings that he attends (however, he does not always know about the meetings). He thought it would be good to take a tour of stations to know who is there, what is going on, etc.

**A Horticultural Scientist:** Structural changes so that staff are more available for day-to-day functions involving research would be helpful (he or his students have to do everything themselves in projects, generally; e.g. he has to set up his own pump, etc.). The University Farm should have the same processes/protocols as other stations. It is often difficult to get things done in a timely manner.

**An Animal Scientist:** There is no common goal or integrated purpose (communication) to meet the actual needs of N.C. citizens. If the focus has been lost, consolidation of stations may be an

opportunity to try to work together to integrate without ignoring important and needed research. That the scale (relative weights of the work at any particular station) may be imbalanced is an obstacle, but efficiency may be more important. A short-term improvement would be to have a meeting, re-focus and get things done.

**Briefly discuss impediments: facilities, infrastructure, allocation of resources (fair) and staff. Questions: Is red-tape in the system an impediment or challenge? How about production for receipts at stations, is it an impediment to research?**

**An Animal Scientist:** She is writing a grant to support and enhance others' research. She asked, "Why can't our farm staff help with irrigation, weeding, putting up doors, etc.?"

**An Animal Scientist:** He stated that at our unit, we rely too much on students for non-research related activities and work (he does not like this). You cannot always depend on students or personnel for various and numerous reasons (i.e., particularly when that dependence is in violation with student work protocols). For instance, you may have a student who is supposed to be doing research but will be called away to do weeding or some other farm task. Another problem is not being able to get students to our farm, much less a research station. Students are not allowed to drive state cars.

**An Agricultural Engineer:** There needs to be additional enclosed facilities on stations for research projects.

**An Animal Scientist:** She stated that there are many retirements approaching in the next year or so. We need to think about that in regards to future research, how it will affect SAES.

Dr. Baldwin thanked everyone for attending. He stated that many good points were made and he will report back.

## Appendix VII

### Facilitated Strategic Planning Session with NCSU Faculty December 16, 2008

Following are summaries of the discussion prompted by the nine questions asked.

1. What have you done cooperatively and collaboratively that is working to the betterment of the research stations?

Faculty have worked collaboratively to raise money (grants, etc.) and in-kind support for the research stations. They identified shared equipment, labor and other resources as ways they have supported the research stations. They have built working relationships in state, regionally, nationally and internationally with stakeholders, other universities, private companies, etc. They felt their research, extension (field days and tours of NCSU research projects) and teaching programs (undergraduate and graduate education) have promoted strong public support of the research stations. Faculty also feel that strengthening the relationship between NCSU, NCDA&CS and commodity groups and stakeholders will work to the betterment of the research stations.

2) What will a future efficient and effective Research Station System look like?

“Efficient” was defined as working with as little waste of resources and energy as possible.

“Effective” was defined as producing or capable of producing an intended result, that is, able to accomplish a purpose. Faculty said an efficient and effective Research Station System would include high-quality station staff, effective land management, strong facilities infrastructure, state-of-the-art and up-to-date equipment/technology and efficient station management. The faculty believe that for efficient management the following must occur.

- Coordination/communication between agencies and station management
- Communication between station superintendents, staff and principal investigators (faculty)
- Station management must be coupled with accountability for success in supporting research
- Stations and management must be research-focused
- Development of a research station mission
- Availability of diverse systems on focused stations (location and environmental needs) that can host faculty research

Adequate funding of agricultural research stations is critical to support agricultural field research projects. Research successes on stations should be communicated to the public. In addition, an updated resource management programs (relative to the Crops Online Resources System and the Animal Resources Request System) are needed.

3) What are the challenges that make achieving an efficient and effective research stations system for the future difficult?

Faculty listed the following challenges.

- Communication between NCDA&CS and NCSU administration

- Research station management inefficiencies
- Adequately trained staff
- Development of a shared vision among all entities for the Research Station System
- Inadequate funding for research station support
- Resources spread too thin across research stations
- Quality and quantity of research land
- Out-of-date equipment and infrastructure
- Process to ensure accountability of station management to faculty research project leader, who is accountable to funding agency.

Faculty believe the stations should be focused on research, not commodity receipts or other activities that are non-research.

4) What are the opportunities that make an efficient and effective Research Station System for the future possible?

Faculty believe that conducting research that the public recognizes as important to their livelihood represents the greatest opportunity for research stations. To take advantage of this opportunity, faculty identified people as being at the center of an efficient and effective Research Station System. Specifically, they mentioned good personnel on NCDA&CS and NCSU stations, stressing the importance of taking advantage of opportunities to increase training, rewards and recognition for these workers. The elements for an efficient and effective Research Station System are in place. Opportunities also exist in developing ways to improve communications.

5) What short-term (immediate) improvements can be made in order to move toward the goal of a state-of-the-art Research Station System?

Faculty identified increased training of research station workers, addressing funding challenges, consolidating station research and management, addressing specific problems or issues at some stations, improving irrigation management, adopting best production practices for crops used in experiments, prioritizing research, and addressing accountability. Faculty felt NCDA&CS and NCSU should share station oversight as on-station decisions can directly affect research success. The resource request systems (formally known as the Crops Online Resources System and the Animal Resources Request System) should be modernized to provide more detail and be more efficient. Faculty suggested that management of some stations could be consolidated. They said all stations are important, especially those that represent specific geographic areas; however, funding is not at the level needed to support research. Faculty suggested increased legislative funding or closing some stations and methods of increasing support. Faculty members also felt partnerships with private companies, stakeholders and public partnerships could be strengthened such that funding through in-kind services support and financial support through grants could be increased.

6) How can we continue to strengthen the working relationship between NCA&T, NCDA&CS and CALS?

Faculty believe that the roles of NCDA, NCSU and NC A&T should be clarified and that they should collaborate on agricultural related issues when overlap occurs. They encouraged a team approach to addressing issues. They also identified improved communication and interaction

as ways to strengthen the relationship between the three organizations. They suggested that NCSU and NC A&T faculty meet to identify common research interests and objectives. They suggested that staff from NCDA&CS (all divisions), NCSU (all personnel in CALS), NC A&T (all personnel in SAES) be familiar with activities that occur on research stations.

7) What are the trends that will drive the research needs for the next 10 years in agriculture, natural resources and the environment?

CALS and SAES are the only sources of public agricultural research data in the state, and the two colleges have the confidence of the state's diverse agricultural community in part because the colleges place the public interest over private interests. Faculty have diverse areas of expertise that are uniquely suited to address problems important to agriculture in the state. They provide unbiased research, are crucial to the undergraduate and graduate training that prepares students for academic and industry jobs. Their existing research support is high. They identified four major topics that will be the focus of research conducted on the research stations in the future. They are:

- research on biomass production, biofuels and local feedstock utilization for biofuels;
- application of molecular biological methodologies in breeding in order to shorten the time needed for release of improved, adapted varieties;
- research on stations in the future will be multidisciplinary and combine basic, biomedical, and applied research;
- recognition that production agriculture of all types will be firmly based in regional systems with regional production practices.

Biomass, biofuels, and byproduct utilization should focus on locally available feedstocks but include the introduction of new energy crops that do not compete with food crops for arable acres. For biodiesel, new varieties and production practices may include peanuts and soybeans. Also, new bioenergy crops need to be evaluated. Issues of sustainability and economic potential (life cycle analysis) must be evaluated also.

There are rapidly increasing opportunities to blend basic and applied research. High throughput phenotyping in order to understand genome function is needed. Marker-assisted breeding techniques significantly shorten the time required to release new varieties in small grains. Research on the stations in the future will be much more multidisciplinary and be involved in such fields as plant-animal-climate interactions and mixed cropping systems. In biomedical research, swine and chickens are already good models. Future crop enhancement for nutrients will be an increasingly important field of endeavor.

Plant breeding and adaptation will always be an important need in the state. Developing cultivars and farming systems that fit local environments is crucial. Ensuring production of mycotoxin-free crops continues to be an important state need. Determining the profitability and sustainability of current and future crops is an active research topic. Testing the adaptability of germplasm to the different areas of North Carolina has great utility because of our diverse agriculture. The research stations of the future must provide adequate facilities for farm production systems, allowing the appropriate environments for evaluating genetic diversity within crop species. Nutritionally enhanced crops are gaining momentum. Crops must be given the ability to produce under unusual weather patterns.

Food animals and plants will increasingly utilize genetic markers in breed and variety development. New varieties for niche markets are already in demand. Organic agriculture, non-GMO and development of soy foods are examples. There is a great need for research that utilizes large numbers of genetic lines to examine performance in different environments and mines germplasm collections to bring new genes and genetic pathways into farmers' fields via integration of DNA laboratory advances into breeding programs. Given the diverse environments afforded by the locations of the research stations, N.C. breeding programs overall have impacts also at the national level. Beef production practices in the southeastern U.S. are very important, as are genotype and environmental interactions.

The Center for Environmental Farming Systems address research needs in organic production trends. There is a need for local and diverse production systems and identification of novel or modified conventional crops for local production. Sustainability of production that is environmentally sound, economical and ethical is essential. The stations must provide the ability to solve production problems and the facilities for increasing nutrient utilization efficiency in swine, cattle and poultry as well as in crop plants.

Factors limiting crop production profitability such as weeds, pests, labor costs and fine tuning of Best Management Practices for crop and animal production, including animal well-being, need to continue to be research topics. Issues such as the impact of agriculture on water quality in varying landscape types need continued attention. NCSU is also positioned to respond to climate change. New agricultural crops for the turf and nursery industries are important, as are efforts in value-added products and products (probiotics) that improve human nutrition.

8) What criteria should be used to prioritize research needs for the research stations system?

The following criteria were identified.

- Importance to state, national, world stakeholders
- Scientific and educational benefit to society
- Long-term viability (funding)
- Funding availability
- Research topics listed in number 7 above
- Integrated research where basic and applied research are employed to maintain a stable, safe, sustainable food supply
- Potential positive impact for society
- High probability of success with resources available
- Impact on training of future scientists
- Animal well-being, social and production implications
- Economic sustainability and viability for growers
- Contribution to feeding and clothing the world
- Impact on regional food security or self-sufficiency
- Impact on climate change and scarce resources.

9) Given the trends identified, what are the potential future research needs that the research stations are uniquely suited to address?

Areas where research stations can support faculty research include: biofuels; bridging applied research with basic research; multi-disciplinary research; biomedical research using animal-crop or animal models; crop production profitability and sustainability; plant and animal breeding and genetics; farming systems; sustainable systems; specialty crop development; organic production systems; adapting discovery research to practical uses; research needing diverse environments; crop and animal efficiency systems; public education of agriculture, agricultural products; faculty with diverse expertise; unbiased research; undergraduate and graduate student training; and new agricultural products.

A report on a the facilitated strategic planning session with NCSU faculty is available on the Web at: <http://harvest.cals.ncsu.edu/research.cfm>

## Appendix VIII

### Regional Public Meetings

Regional public meetings were held in Greensboro, Plymouth, Raleigh and Waynesville to seek comment on North Carolina's agricultural research stations.

Public comments in Greensboro focused largely on the importance of research to our agriculture; the need to preserve land, especially land for research; the value of our Research Station System to the greater community, the importance of working together, and concerns that agricultural resources will be lost. In Plymouth growers encouraged research land preservation, more contact with state legislators and continued efforts to build the relationships among the universities and NCDA&CS for "the advancement of agriculture in the state." It was emphasized that our research stations are a "proven system" conducting important work on local pest problems, that farmers must become more productive, that local communities need and expect support for rural economic development, and that the general public realizes many benefits from work at the stations.

Participants in Raleigh noted that "new technologies are critical to the future of agriculture and farms." One grower said research stations are a "lifeline for the farmer." Agricultural research means "increased productivity, improved food safety, environmental enhancement and economic stability... helps our standard of living." University research on stations has brought major industries to Eastern North Carolina. We must educate legislators and the public about agriculture.

In Waynesville several growers expressed major concerns about declining funds for research and staffing at a time when agricultural markets are growing and rural economic development needs are critical. One supermarket representative (200-plus stores) indicated greater demand for produce in the area requires more work by research stations to help local farmers. Our diverse agriculture must have stations in specific areas across the state to address local needs. Many in the audience "owe our livelihood" to agriculture. A number of growers stated the need for more organic and small farmer research, especially in Western North Carolina. There may be opportunities for more regional research. Educational programs have been "great" and helpful to thousands of school children. Again, there were concerns about educating the public and legislators on the essential nature of agriculture. During the meeting Commissioner Troxler read a letter from state Representative Ray Rapp on the importance of the Mountain Research Station to the western part of the state.

## **Notes from Public Meetings**

### **Regional Public Meeting Guilford County Agricultural Center Greensboro, North Carolina September 15, 2008**

Approximately 35 people attended, including key producers, commodity association representatives and community leaders. A member of the External Advisory Committee, Mark Peters, was present.

#### **Selected Opening Comments**

Commissioner Steve Troxler – “As we begin this process, we look forward to improving our agricultural research system. We expect to develop closer working relationships within the agriculture family. We need your input and comments.”

Dean Johnny Wynne – “As we look to the future, we anticipate that our total need for food will exceed our production. We will need more resources and more flexibility in our agricultural research system. Only about 53 percent of our total land is usable for research. North Carolina agriculture is very diverse. We have about 250 faculty using the research stations, and the agricultural community depends on us.”

Dean Donald McDowell – “We will develop our Plan for the Future. We are pleased to be working together. We are here tonight to learn and to listen to what you have to say.”

Richard Reich gave a general history of the strategic planning process and discussed the organization of committees. He explained guidelines for the public comments.

#### **Public Comments**

- Important to reach outside the box to provide help to farmers.
- Commodity Representative: How does the money go to the farms from the legislature? NCDA&CS: Goes directly by a line item, also have receipts and timber sales. Wynne: Funding goes to each entity. Small percent for administrative fees, faculty contributed about \$13-14 million over last three-year period. If there’s a short fall, where will money come from? Troxler: We try to absorb some costs but need to be funded from both education and NER funds. McDowell: NC A&T gets USDA money and receipts along with some state money.
- Grower: Speaker said research is very important. Scientists did research on the speaker’s farm and NCSU named a blueberry after them. We’ll be at gate of no return without research. Wants collaboration between the three groups: NCDA&CS, NCSU and NC A&T.
- Speaker worked on tobacco: Worked at Clemson for career and on South Carolina stations. Now back in N.C. Research is critical. Also represents Farm Bureau. NCSU and NCDA&CS should be ones to decide on research and systems, not legislature. Commissioner serves on Council of State, which could help bring more money to the

system. Keep land, lease it out or preserve it. Don't sell land.

- Nurseryman: Preserve stations and let NCDA&CS retain some level of control. We need to preserve land, especially land for research. We need research for all different types of crops, not just traditional field crops.
- Dairy farmer: We depend on research stations; keep them funded. We need crop research for cattle feed, etc. Each farmer does some research on his own. His sons are taking farm over. We need the research farms.
- Dairy farmer: Biggest concern is the housing and development around farms. Waste from the dairy is a big issue. Needs more research on waste. Waste is primary issue for animal producers. Odor is the big thing. Public doesn't care if they don't smell waste.
- Green Industry wants the three groups (NCDA&CS, NCSU, NC A&T) to keep working together. We support preservation of land. Not sure how consolidations can be done, but willing to work on it. Support any kind of funding or needs at the legislature.
- Field labs are not part of the study. They are academic, training and some research. They have a different mission. Is there competition between field labs and stations? Answer: Field labs are mainly teaching facilities, so they are treated differently.
- How can agricultural community get to the legislature to tell them the importance of the stations?
- Leaders of the three entities need some flexibility to transfer between systems. Education committee in legislature is a disadvantage for NCSU. They are interested in other things besides agriculture. Special line items have provided some resources.
- Wealth distribution is a problem with the food dollar. Farmers are only getting 24 percent of the food dollar. We need to show impact of agriculture. That is what sells. We need to get information out to the masses.
- There is a concern in industry that resources would be lost during this evaluation period.

Closing comments and appreciation were expressed by Commissioner Troxler, Dean Wynne and Dean McDowell.

**Regional Public Meeting**  
**Vernon James Center Research and Extension Center**  
**Plymouth, NC**  
**December 10, 2008**

Approximately 80 people attended, mostly producers, commodity association representatives and community leaders. A member of the External Advisory Committee, Beth Foster, was present. Representative Arthur Williams and Mr. Maurice Berry, Jr., member of the Board of Agriculture, also attended.

**Selected Opening Comments**

Dean Johnny Wynne – “We all recognize the value of research stations and our system. Applied research is a real strength in our state. About 250 of our 400 faculty members work in research and extension. We have agreed to work together for the good of agriculture. No plan to close stations. We need more land to properly rotate fields for disease and pest control.”

Commissioner Steve Troxler – “A message of unity is what’s best for our agriculture. There is beauty in farm and forestland. This issue has driven a lot of passion. A unified voice with passion can be a powerful resource. Talk to legislators and Board of Agriculture. We must update our system with a road map to the future. We will move forward. No industry in North Carolina is more important than agriculture.”

Dean Donald McDowell – “When I travel around the country, people ask about our activities in North Carolina. Many are envious of our programs and our research system. We must stay in the forefront of these issues. We want to hear what you are saying is most important to you.”

Richard Reich reviewed the strategic planning process and discussed the organization of committees. He explained guidelines for the public comments.

### **Public Comments**

- Farmers should contact their legislators (house and senate) about the importance of agriculture and research stations. Need to do a better job of talking with neighbors and friends about importance of agriculture.
- Farmland preservation is very important. However, if land could be swapped and we could come out with a better situation, that should be considered.
- The stations must be efficient, but that doesn’t mean they shouldn’t be supported less or it is currently a wasteful system.
- Stations are important in innovation in agriculture.
- Research Station System is a proven system and “if it isn’t broken, don’t fix it.”
- We need to tell the legislators what needs to be done in agriculture, not the other way around.
- Concerns over closing some of the stations. Confusion over this among people.
- The stations are important part of graduate student education and training.
- Working together is important and the relationship between NCDA&CS, NCSU and NC A&T is important to the advancement of agriculture in the state.
- Need to make it clear that all citizens depend on the Research Station System, not just farmers because the public benefits from the products of agriculture.
- Research stations are important in work on local insect and disease problems.
- By having NCDA&CS and NCSU and NC A&T all together, it provides multiple avenues for getting things done. Two funding sources have an advantage.
- Farmers will have to produce more food and fiber on less land, so farmers will need new information.
- We are the envy of other states and they want an agricultural system like ours.
- Other initiatives, such as biofuels, may need the stations and they need to be there.
- The stations provide a strong local presence, and this is beneficial to the community.
- Comment from the North East Commission. Want to see Vernon James/Tidewater as a biotechnology center for the Eastern N.C. Would like to see more faculty positions and an emphasis on GMO crops, extraction and processing facility and innovation of new products.

Closing comments and appreciation were expressed by Commissioner Troxler, Dean Wynne and

Dean McDowell.

**Regional Public Meeting  
Wake County Office Park, Common Building  
Raleigh NC  
December 16, 2008**

Approximately 25 people attended, including producers, agribusiness representatives and commodity association leaders. Two members of the External Advisory Committee, Dr. Charles Hall and Mr. Pete Burgess, were present.

**Selected Opening Comments**

Commissioner Steve Troxler – “The future of research stations is critical for our \$70.8 billion industry. We seek an efficient, modern and effective system. This process is *not* about how to reduce agricultural research. We must do more. We *need* more food and more research. We must be unified in our cause; we will do this task without division. We want your input and comments.”

Dr. Sylvia Blankenship (for Dean Johnny Wynne) – “Two hundred and fifth faculty work on research stations in a wide range of projects. We are not closing any research stations; all are valuable. We may consider land swaps. Outreach and extension, field days are important to communities. What do you think is important? We live in a changing state.”

Dean. Donald McDowell – “We focus on major areas: community development; biotech/ biodiversity; international trade; small farms.”

Richard Reich reviewed the strategic planning process and discussed the organization of committees. He explained guidelines for the public comments.

**Public Comments**

- New technologies are critical to the future of agriculture and farms. Research stations should operate fully and effectively. Any sales should go back into the Research Station System. We should have commodity groups involved and unified on this issue. Support for applied agriculture research is essential. Field research and public research are a vital complement to private research.
- Research stations are a “lifeline for the farmer.” We must get more of the public behind agriculture. If they’re interested they will support and promote agriculture. We must have a good Research Station System to change for good.
- Hope for more technological efficiency, from governor-elect meeting. Improved and better technologies are so important. Research stations are critical, combined efforts of university and Department of Agriculture are best. We cannot operate without extension and technical support. When all is said and done this will be presented to legislators ...
- Proposition 2 in California, concerns for impact on animal industry. We support keeping all of the research stations; food safety factor.

- We expect an excellent document will be presented ... Agriculture research equals increased productivity, improved food safety, environment enhancement and economic stability. We need to get information to 170 legislators. We must deliver this message to them. Agricultural research helps our standard of living and productivity.
- North Carolina is one of the best places in the country to farm; we have at least three of the top counties. Research stations should not become a political issue. Universities are the reason for our success, research stations brought major industries to Eastern North Carolina; meat processing, hog slats, etc. Research stations provide invaluable benefits to everybody in this state. We must educate, for example, excellent NCFB program called “Ag in Classroom.” The general public does need to understand the impact of agriculture in this state. It might be good to prepare education piece for legislators.
- NC Farm Bureau will have a new public relations campaign this year to inform members and the public about agriculture. NCFB Legislative Day will be held in February.
- Speaker works on a research station and operates a meat goat farm. There needs to be more emphasis on small-scale farms, sustainable and local foods.

Closing comments and appreciation were expressed by Commissioner Troxler, Dean Wynne, and Dean McDowell.

**Regional Public Meeting  
Waynesville, North Carolina  
January 14, 2009**

Approximately 140 people attended, mostly local producers. Neal Stamey and Jimmy Gentry, who are members of the External Advisory Committee, were present.

**Opening Comments**

Dean Johnny Wynne – “Mandate for 7 percent NCSU budget reduction due to the overall economy. Governor is looking for more cuts, must balance the state budget. Agriculture is still the number one economy in N.C. Rumor that we don’t work together -- not true. Commissioner supports many university projects. We’re all working together to support agriculture in our state. We are committed. Citizens in urban areas are increasing; agriculture group is declining. There are no plans to close any research stations. When we follow recommended practices, we need more land for proper crop rotations. We are not abandoning applied research. We do seek an efficient, effective system. NCSU has 400 faculty members at CALS, third largest in the United States and 250 do applied research at research stations. Agriculture must be profitable and competitive in global markets.”

Dean Donald McDowell – “Dean Thompson is in an interim provost position. Budget cuts are stressful. We are all looking for ways to cut. Efficiency and effectiveness are keys to a better way to manage resources. We have and need lots of collaboration with NCSU and NCDA&CS. NC A&T is the largest black agriculture program in the nation. We need stations for training students and for a safe food supply. Our partnerships help to serve the needs of our state and our students. We welcome feedback.”

Commissioner Troxler – “Thanks for your support. I am pleased to announce that Doug Sutton is the new manager at the Western N.C. Farmers Market. We must work together to operate properly in a Research Station System that looks to future. People want continued cooperation for our \$70 billion dollar agriculture industry. Farmers will have to be efficient to grow more food. Need research to maintain agriculture moving forward. Stations are designed in a network to represent different environments. Very close relationship between the three groups. Strategic plan will be good for the future. The department also has to revert money and is expecting more cuts. These are tough times, but we will fight our way through it.”

Commissioner Troxler also read a letter from Ray Rapp, state representative, on the importance of the Mountain Research Station.

### **Public Comment**

- **Sod farmer:** Growing crops, need two things: good product to sell and place to sell. Hard to do without land-grant system. Concern for NCSU. Dollars — tax money, money to land grants — is eroding. Research people spend so much time getting money together, it affects their research. We have a failed funding system. The solution is talented folks and good leadership. Get back to more tax funds for research. Need good research.
- **Haywood Farm Bureau Representative and cattleman:** We need to educate our legislators on how food is produced.
- **Farm Bureau Representative:** I appreciate efficiency, but I’m concerned for adding research at Kannapolis. How we use what we have and expand, e.g., we have empty offices here, yet we expand at Fletcher. Skeptical — we have been fighting for positions in the west, like the beef extension specialist and extension plant pathologist positions. Issues — need to modernize research stations. Cows hold Western N.C. together. Help us keep our farmland in Western N.C. Grant funded research won’t work in the long haul.
- **Nursery owner:** Regrets from N.C. Nursery Association president. We oppose sale of research stations. We have about 2,800 acres of sod in North Carolina. Limited research on nursery crops in North Carolina. Need more dollars for new specialty crops. A local herb company has 100 people employed. Bulb test is important; emerging crops. We should consider regional research. Offer opportunity for Tennessee and Virginia to use our stations for mutual benefit.
- **Farmer, tobacco and tomatoes:** Marketing and disease controls are two major issues. We elect the commissioner, not NCSU administrators, which allows growers to control management of 12 of the stations through the election process. University and the Department of Agriculture have done a good job. We need to keep management the same.
- **Bethel Community Organization Member:** Buy Haywood marketing program. Soil and water educational programs have been helpful. Can we do more research on sugar cane for ethanol? Home-grown goodness. Home-grown fuels. Asks about the criteria for inspecting research stations.
- **Cattleman:** Thanks; proud; grassroots N.C. We all come here as farmers. Very diverse state. Mistake on regulating water — different regions and needs. This is the group that feeds you! In 2050, our feed need will equal 200 years of production. Having stations in specific areas and/or regions is important. Assure us each year that we won’t lose our research station.

- Farmer (Retired from Research Station after 33 years): Well-qualified research station staff; services way beyond research. Raspberries to popcorn to flood relief; hay relief. We should build up existing stations before we add new stations. Staff losses over the years. We must have reasonable funds from legislature. Improve existing stations. Listen to local farmers' needs. Dean Ed Legates said, "When a need and a mission merge, we know our goals."
- Supermarket Representative (in six states, 200 plus stores; located in Swannanoa): Our produce department needs more sweet corn, peppers, tomatoes, especially organic vegetables. Need research stations to make this happen.
- Haywood SWCD representative: Memories of Mountain Research Station; coordinated many programs. Six hundred students for 26th Field Day; 15,000 students, fifth graders. Year round events. Bill Teague never says no; summer camp, FFA Environathon, great programs.
- Local resident: Career as public servant. DOC transfer land. Hope and change for Agriculture — change is only thing to survive; new products. Bill Teague and quality people-get programs out here, keep development of research.
- Leister resident: Appreciates learning close to home. Good to hear you are not closing research station. Strategic opportunity; manage organic farms, cannot meet demand; great work at CEFS. Late blight" is big problem in this area. Need CEFS in mountains. Tomato breeding may help late blight resistance. We can't afford to haul our food from California.
- Former county extension agent: Earned his MS degree on the research station. Research Station must be preserved. Consumers need to be here to tell us what they think. We should listen to them.
- Yancey County grower: We all want to support the research stations. Most of us owe our livelihood to agriculture. I grew up on small farm. We need to educate the public and legislators. NCFB supports this cooperative effort.
- Local small farmer: Would love to see more organic research. We grow trials but need more research for small farm equipment and mulchers. Varieties of lettuce, small farm equipment; mulches for organics.
- Beef producer: Thanks for coming. Now you know how far we come to Raleigh.
- State Farm Grange representative: Seeking viable livestock market for this area. Getting pledges from individuals to raise local dollars. Sign up sheets on table.
- Local grower: Stressed the importance of organic research and need for it in the west. Also stressed the need to communicate organic information on a very simple level so people will understand how to grow. Need to address audience of people who don't have much formal education.

Commissioner Troxler – "We all realize the value of research stations and the importance of educating the public. We have no intention to close research stations. You are the key. Legislators will respond to you. The Western N.C. legislative delegation has been very supportive. Talk to your community about what agriculture means and how important research is to N.C. Tell folks what we have to do for the future of agriculture research in this state. We want the legislature to know we are cooperating on the strategic plan."

## Appendix IX

### Station Peer Reviews

Goals of the peer review process were:

- Identify opportunities to increase research station efficiency, both short- and long-term. These opportunities could occur in multiple ways. 1) The review team might identify inefficiencies on the station and share ways to address them with the superintendent. 2) A team member might see efficiency on a station and provide that information to all research stations so it could be considered for adoption where relevant. 3) The interaction between people during the peer review process might stimulate new ideas on efficiency.
- Identify strengths of each research station. Each station is unique, and its uniqueness varies agriculturally and topographically and contributes to a Research Stations Division that represents the diversity that exists across North Carolina and among its agriculture. Review teams were expected to document these unique attributes and characterize opportunities the station could develop or expand further for hosting research. Noted opportunities could involve an existing program or a program that does not exist but for which there is potential at a particular location.
- Identify areas for improving research stations. It must be a given that all stations have areas that can be improved. Review teams were to identify and communicate specific areas on each research station that could be improved. Because everyone will be a reviewer and be reviewed, it was important to enter into this process with the attitude that earnest and frank discussions could lead to a positive outcome. The final step of the peer review process included a group discussion with all superintendents designed to begin developing a plan to improve the Research Station System.

Common objectives identified by the review process (meeting – March 11, 2009)

- Develop a mission for the division that focuses on the strengths of each station and communicate the value of research.
- Improve communications and strengthen partnerships with each agency (NCSU, NCDA&CS and NC A&T) to overcome differences.
- Evaluate programs and assign research division-wide through changes in the project resource request (092) process.
- Evaluate resource efficiencies and energy audits, coordinate usage of facilities, inventory.
- Interconnect stations based on research focus — land for rotations, labor, equipment, expertise.
- Transparent budgets, combining station budgets, evaluation of capital project and equipment purchases, inadequate funding.
- Modernization of infrastructure and equipment, cutting-edge technology, ability to manage timber receipts for funding.
- Training of staff, improve quality of labor.

The review process will not stop with identification of the objectives being identified. Part of the process has already started with superintendents communicating about sharing resources and ideas on how to interconnect projects and stations. Station reviews will continue with

the intent of each station being reviewed at least once every three years. Review teams will be expanded to include administrative staff, researchers and extension agents. Input from this larger group of stakeholders will offer direction on developing a division that maximizes resources and services to improve the quality and efficiency of innovative research.

## Appendix X

### Grant Opportunities

During the past five years, the Research Stations Division has begun applying for grants to enhance existing programs and to assist with ongoing research. The grants may provide funding to support one station or a group of stations depending on the program to be enhanced. Funds have been awarded or applied for to support acquisition of materials, supplies and equipment as well as providing funds to support temporary labor.

Grants Awarded to or Applied for by the Research Stations Division Include:

1. USDA Commodity Credit Cooperation (2001-04): Diversify and strengthen crop options - \$378,000; Grant awarded to NCDA&CS, Research Stations Division is a subgrantee: Mountain (\$50,000); Upper Mountain (\$128,000); Center for Environmental Farming Systems (\$200,000)
2. USDA Block Grant (2002-04): Fund marketing potential of specialty crops - \$20,000 to improve facilities at the Cunningham Research Station in Kinston (Portion of a \$200,000 grant awarded to the NCDA&CS Marketing Division)
3. U.S. Fish & Wildlife (2004-05): Eradication of Tropical Spiderwort - \$10,000; Support eradication of the noxious weed tropical spiderwort from the Cherry Research Farm
4. Tobacco Trust Fund (2005-06): Increasing Biofuels Utilization - \$61,000; Support transition of all 16 research stations to biodiesel use
5. Tobacco Trust Fund (2007-08): Expanding Brambles Production – \$165,000; Support brambles production on four stations (Mountain Horticultural Crops, Piedmont, Sandhills, Upper Mountain)
6. Tobacco Trust Fund (2008-09): Food Safety - \$261,000; Supports food safety and development of GAP protocols in brambles production on six stations (Mountain Horticultural Crops, Oxford, Piedmont, Sandhills, Upper Mountain, Upper Piedmont)
7. Biofuels Center of North Carolina (2008-09): Expand current biofuels program - \$35,415; Support the expansion of current biofuels programs, both research and demonstration, at the Oxford Tobacco Research Station
8. Tobacco Trust Fund (2008-09 – second cycle): Enhancing Strawberry Production - \$337,000; Support strawberry production at four research station and Kannapolis (Castle Hayne, Central Crops, Piedmont, Upper Mountain, Kannapolis) (*application submitted, not awarded*)

A second and relatively new opportunity is collaboration with several different entities involved in a single program. These may include NCDA&CS divisions, NCSU departments, NCA&T University, USDA agencies and local communities. In these instances, all interested collaborators work together to develop a proposal. The Research Stations Division has taken the lead in submitting and managing the grant funds with disbursement as reimbursements.

Collaborative Grants Awarded/Applied for:

1. Golden Leaf Foundation (2008-09): Wheat Production in North Carolina - \$83,000;

partners: Mountain Research Station, NCDA; Crop Science Department, USDA – ARS; a follow-up grant will include the NCDA&CS Marketing Division to conduct statewide market analysis.

A third opportunity for supporting grants involves working closely with project leaders to support their grant proposals. Supporting these proposals is possible as a result of the dual management structure, which allows leveraging of NCDA&CS operating dollars as match monies.

Grants Supported through matching monies:

1. Organic Dairy Production (2005), (Researcher: Dr. Steve Washburn), match amount of \$120,000 over four years; Cherry Research Farm
2. NRCS (2009-10): Winter Feeding of Beef Cattle, (Researcher: Dr Matt Poore), match amount, \$144,000 over three years with additional commitment of \$132,000 over three years for related expenses at Cherry Research Farm and Upper Piedmont Research Station
3. Kellogg Foundation (2007), Outdoor Hog Operations, (Researcher: Dr. Morgan Morrow), match amount, \$276,000 over three years at Cherry Research Farm
4. USDA — Specialty Crops (2009): Sweet potato Production Efficiency, Quality and Food Safety, (Researcher: Dr. Jonathan Schultheis), match amount \$30,696 over three years at Horticultural Crops Research Station at Clinton

## Appendix XI – Station Fact Sheet and Maps

### BORDER BELT TOBACCO RESEARCH STATION (NCDA&CS)

**Location**

**City:** Whiteville  
**County:** Columbus



**Background:**

- Established in 1949
- moved to current location in 1956

**Unique Characteristics:**

- Soils are uniform in nature and highly characteristic of the Southern Coastal Plain
- The southern latitude allows for a longer growing season than other research station locations
- The high humidity and temperatures provide an excellent environment for disease work

**Station Statistics**

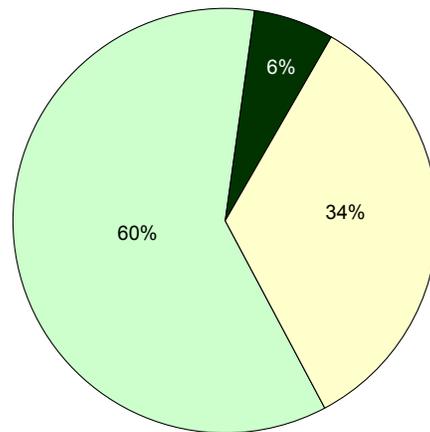
**Staff:** 5  
**Management Units:** Field Crops  
**Buildings:** 10

**Research Program**

Project Leaders (#): 9  
 Ongoing Projects (#): 28  
 Focus: Soybeans, Peanuts, Corn  
 Tobacco, Small Grains

**Acres:**

Station Total		101.44 ac.
Field Crops	58	
Flue-Cured Tobacco	16	
Corn	5	
Soybeans	15	
Peanuts	4	
Small Grains	2	
Rotational	16	
Ponds	0.9	
Woodlands	6	
Infrastructure	36.54	



□ RESEARCH ■ FORESTRY □ INFRASTRUCTURE

**Station Improvements:**

- Two greenhouses used for hydroponic studies
- Burley tobacco curing shed
- Station dwelling

**Station Events:**

- Tours – Tobacco & Plant Pathology
- Meeting – Extension & Community College
- Events – Disaster Relief Hay Demonstration



## HORTICULTURAL CROPS RESEARCH STATION (NCSU)

### Location

**City:** Castle Hayne  
**County:** New Hanover



### Background:

- Main Station established in 1947; Ideal Tract acquired in 1985
- Strawberry fungicide trials have been conducted at Castle Hayne since the 1970's, and serve as the basis for recommendations to growers statewide

### Unique Characteristics:

- Warmer climate, low native soil pH, high water table, high organic matter content and long growing season support the largest public blueberry-breeding program in the world
- Climate provides an excellent environment for plant disease evaluations for small fruit varieties

### Station Statistics

**Staff:** 7

**Management Units:** Horticultural Crops

**Buildings:** 13

#### Research Program

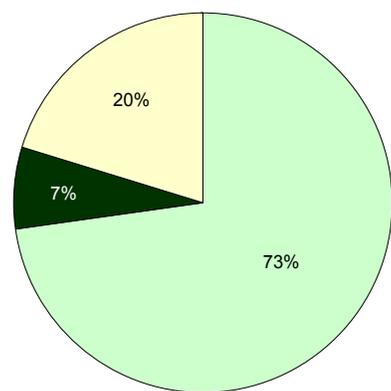
Project Leaders (#): 19

Ongoing Projects (#): 37

Focus: Blueberries (breeding,diseases, IR-4), Strawberries (breeding,diseases), Grapes(breeding,diseases), Cucumbers(breeding, diseases), Watermelon (breeding, diseases) Woody Ornamentals (herbicide efficacy), Woody Fruit Species, Sea Oats, Coastal Beachgrass

#### Acres:

Station Total	111 ac
Field Crops:	0.8
Soybean	0.8
Small Fruits	49.71
Vegetables	11.36
Fruit Trees	0.36
Ornamentals	4.9
Rotational	0.7
Woodland	7.67
Irrigation Ponds	3
Infrastructure	22.5



■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

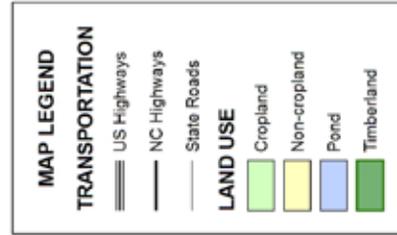
### Station Improvements:

- State of the art chemical storage and mixing room
- Two equipment storage buildings
- Greenhouse renovations for expanded research

### Station Events:

- Field Days – Muscadine Grape and Blueberry
- Workshops – Muscadine Grape and Blueberry
- Training – Soil & Water Conservation and Master Gardeners
- Meetings - Blueberry plant breeders and Turf grass group
- Tours - Southern Region Grape Researchers, Southeastern Nurserymen Association, Hoggard High School Horticulture class

**HORTICULTURAL CROPS  
RESEARCH STATION  
CASTLE HAYNE**  
New Hanover County, North Carolina



Prepared By: Deborah Robertson  
Date Prepared: January 25, 2008

## CENTRAL CROPS RESEARCH STATION (NCSU)

### Location

**City:** Clayton  
**County:** Johnston



### Background:

- Established in 1953
- Variety releases from this location include: Soybeans – 6 varieties; Tobacco – 14+ varieties; Muscadine Grapes – 7 varieties; Tomatoes – 3 varieties; Sweet Potatoes – 1 variety; Watermelons – 1 variety

### Unique Characteristics:

- Located less than 20 miles from the main campus of North Carolina State University makes it a highly assessable teaching platform for research, under-graduate field trips, graduate classes and continuing education programs
- Soil diversity attracts soil-teaching groups to permanent soil pits

### Station Statistics

**Staff:** 20

**Management Units:** Livestock      Head  
                                  Swine                300  
                                  Field Crops  
                                  Horticultural Crops

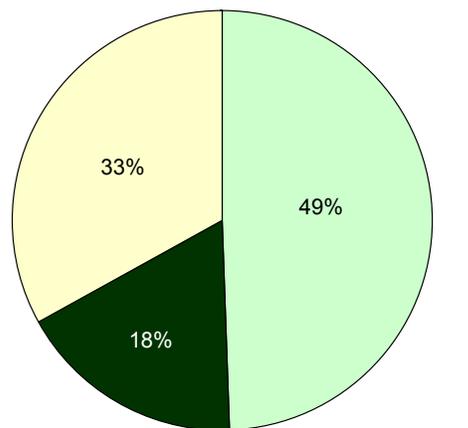
**Buildings:** 40

### Research Program

Project Leaders (#): 40  
 Ongoing Projects (#): 140  
 Focus: Corn, Tobacco, Soybeans, Cotton, Swine, Melons, Peaches, Apples, Sweet Potatoes, Small Grains Squash, Strawberries, Canola

### Acres:

Station Total		488 ac
Field Crops	197*	
Corn – nurseries	22	
Corn – field	35	
Soybeans	47	
Cotton	40	
Tobacco – flue cured	17.5	
Tobacco – burley	1.7	
Wheat	7	
Canola	4	
Forages/Switchgrass	22.7	
Small Fruits	4.6	
Fruit Trees	16	
Vegetables	10*	
Ornamentals (wildflowers)	4.4*	
Rotational (wheat)	17*	
Irrigation Ponds	21.3	
Woodlands	86	
Infrastructure	161	
Lease Land	29.2	



■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

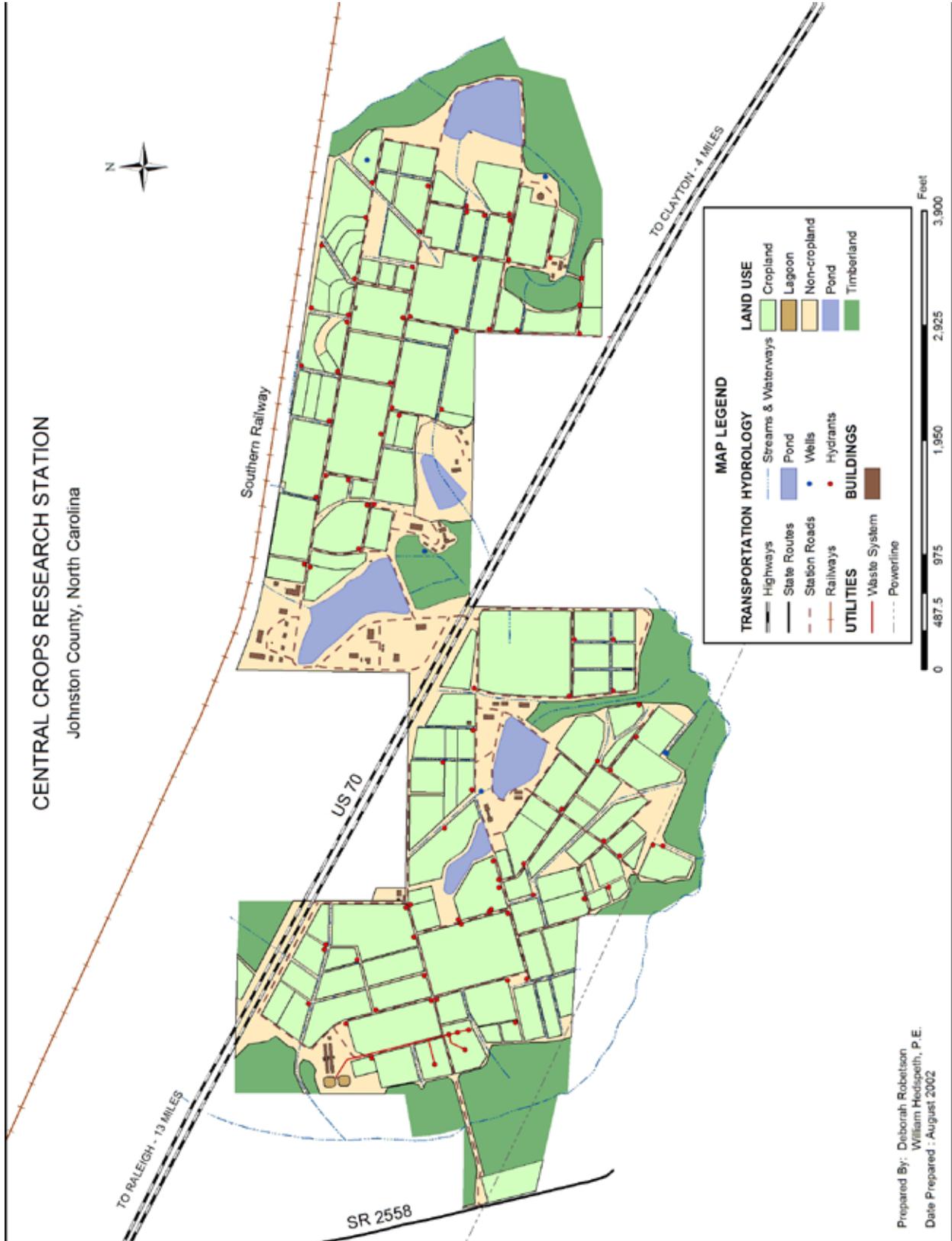
\*includes leased acreage and double cropping

### Station Improvements:

- Burley tobacco curing barn
- Facilities for housing soybean breeding program equipment

### Station Events:

- Field Day - Strawberry
- Tours - "Ag in the Classroom", local school students, international groups
- NCSU Labs – Ecology, Crop Science, Entomology, Soil Classification, Food Safety
- Training - cotton field training, fruit tree pruning



## CHERRY RESEARCH FARM (NCDA&CS)

### Location

**City:** Goldsboro  
**County:** Wayne



### Background:

- Initial acquisition by the state around 1915; portions of the property were transferred to NCDA&CS in 1974
- Records of breeding research dating to 1947 provide an irreplaceable source of information on genetics of dairy herd improvements
- In 1994 portions of the farm were identified as the Center for Environmental Farming Systems (CEFS)

### Unique Characteristics:

- Initiation of long term, large scale interdisciplinary research to develop profitable farming systems that protect our environment and enhance rural communities.
- Location along the banks of the Neuse and Little River provides an excellent opportunity to evaluate the impact of diverse cropping systems on water quality.

### Station Statistics

<b>Staff:</b>	26	
<b>Management Units:</b>	Livestock	Herd Size (#)
	Dairy	415
	Beef	172
	Swine	147
	Goat	23
	Field Crops	
	Horticultural Crops	

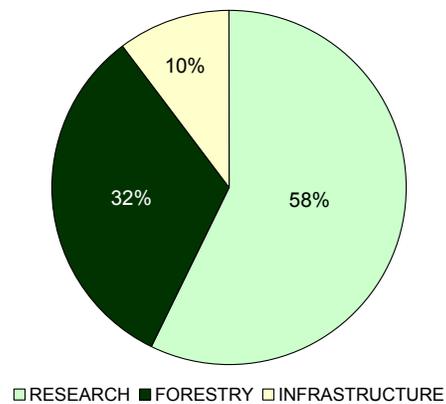
**Buildings:** 41

### Research Program

Project Leaders (#): 26  
 Ongoing Projects (#): 31  
 Focus: Dairy, Beef, Swine, Corn, Soybeans, Cotton, Specialty Crops, Organic Farming, Goats, Wetlands Restoration, Waste Composting, Riparian Buffers

### Acres:

Station Total:	2245.01 ac	
Field Crops	580	
Corn	340	
Soybeans	165	
Cotton	30	
Organic Soybeans	25	
Organic Corn	20	
Fruit Trees	25.43	
Buffers	15	
Organic Vegetables	7	
Pasture/Hay	555.3	
Irrigation Ponds	1	
Rotational	43.83	
Woodlands	787.4	
Infrastructure	230.05	

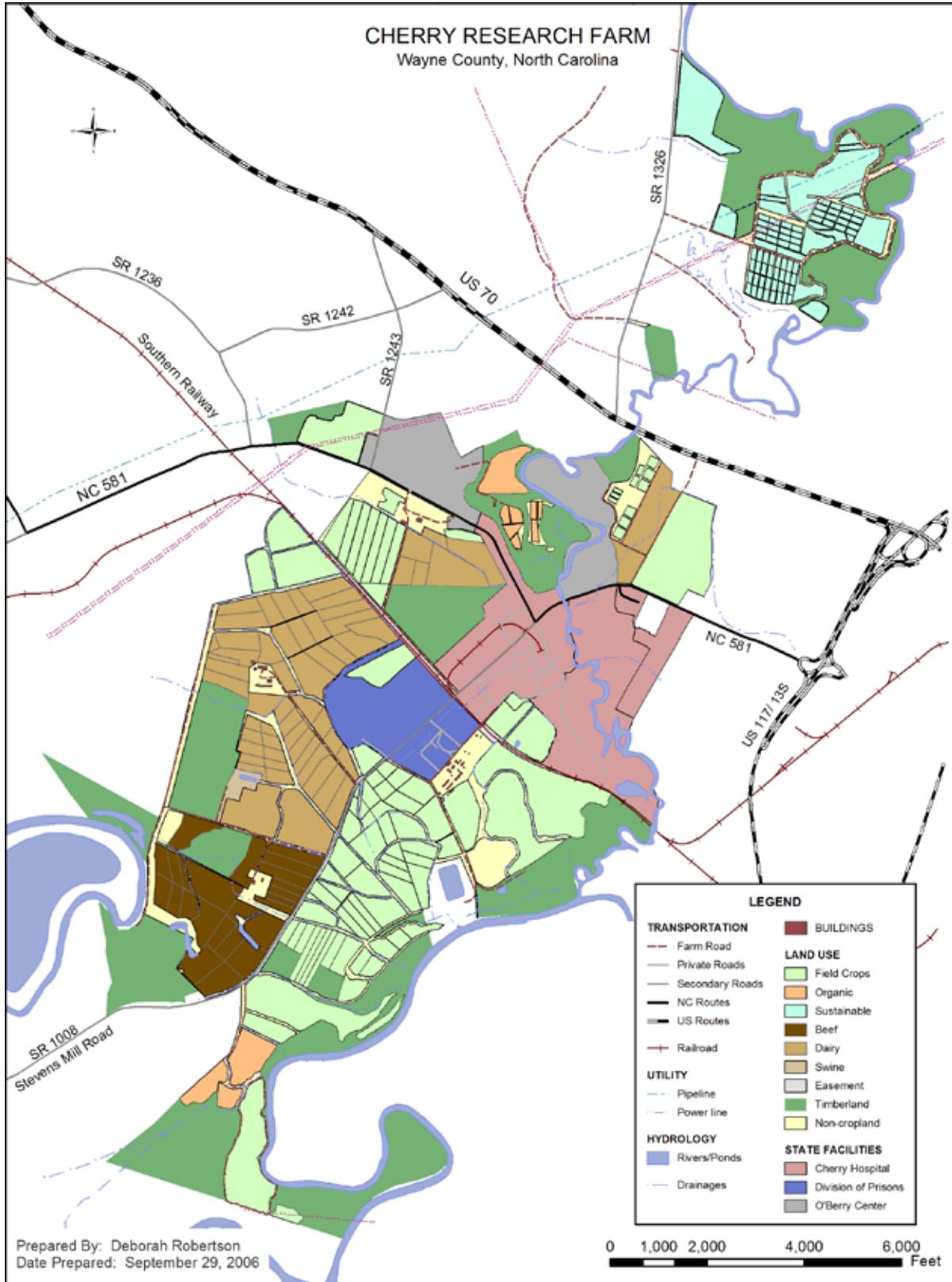


### Station Improvements:

- Construction of a Biodiesel Production Unit
- Upgraded Dairy Working Facility
- Innovative fly control at Dairy Unit
- Initiation of Outdoor Swine Production Unit

### Station Events:

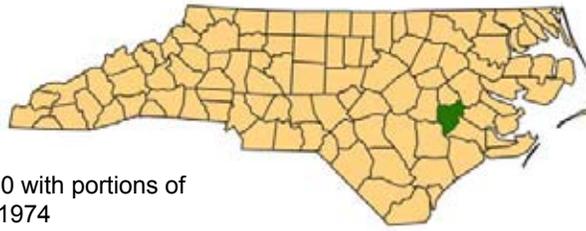
- Training – Fueling the Farm, Bio-Fuels 101 Class
- Tours - NC Rural Center, NC Angus Association, Z Smith Reynolds, Wayne County Discover Ag Classes, Bayer Crop Science, National Geographic, NC Rural Economic Development, Compass Food Groups Tour



**CASWELL RESEARCH FARM (NCDA&CS)**

**Location**

**City:** Kinston  
**County:** Lenoir



**Background:**

- Initial acquisition by the state around 1920 with portions of the property transferred to NCDA&CS in 1974
- Soil uniformity and quality make this a prime location for corn and soybean breeding programs in the state

**Unique Characteristics:**

- Uniform and productive soils can support needed plant breeding and genetics research
- Large uniform tracts and high soil productivity provides the capacity to host large replicated studies
- Ongoing research is critical in helping develop new weed control programs
- Grain production supports animal research units within the research station system

**Station Statistics**

**Staff:** 12

**Management Units:** Field Crops

**Buildings:** 29

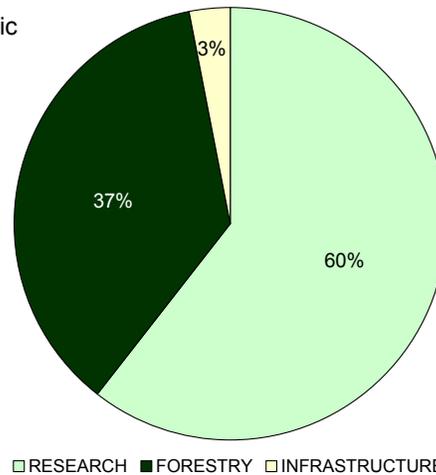
**Research Program**

Project Leaders (#): 11  
 Ongoing Projects (#): 14  
 Focus: Soybeans, Corn, Wheat, Organic Soybeans and Cotton, Invasive Weed Ecology, Native Grasses

**Acres:**

Station Total		1280.56 ac
Field Crops	144*	
Corn	24	
Native Grasses	12	
Soybeans	99	
Wheat	9	
Rotational	748*	
Woodlands	467.49	
Infrastructure	37.57	
Lease Land	39.44	

\* Includes double cropping

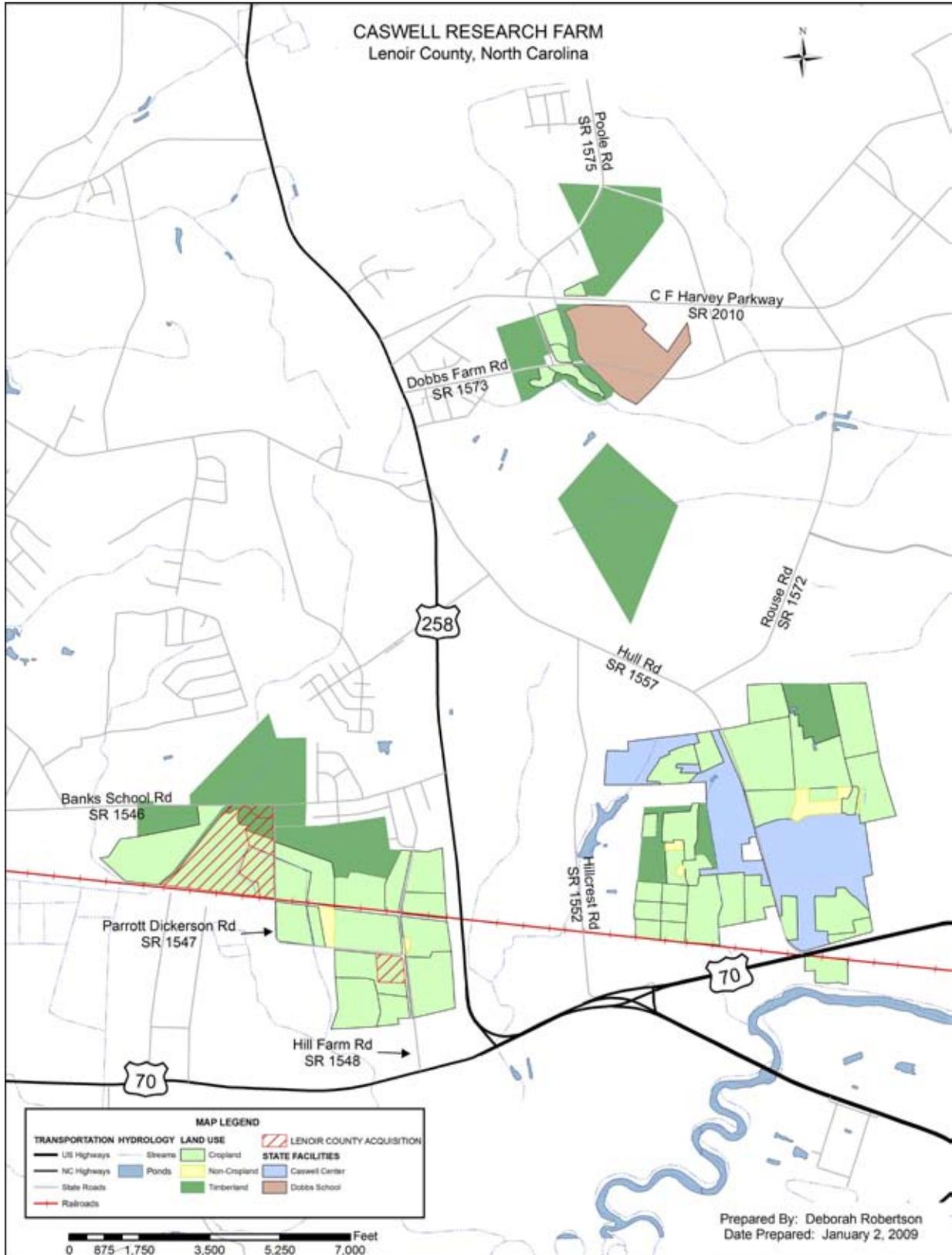


**Station Improvements:**

- Equipment Purchases - Hi-Clearance Sprayer, Tractor, GPS Lightbar navigation
- New Grain Storage Facilities

**Station Events:**

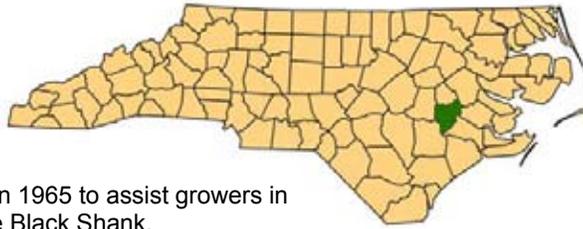
- Events – Disaster Relief, Hay Demonstration



**CUNNINGHAM/LOWER COASTAL PLAIN RESEARCH STATION (NCSU)**

**Location**

**City:** Kinston  
**County:** Lenoir



**Background:**

- Lower Coastal Plain Station established in 1965 to assist growers in combating the soil borne tobacco disease Black Shank.
- Cunningham Station gifted to NCSU in 1985 and is supported by an endowment

**Unique Characteristics:**

- High humidity and the slightly higher than average winter temperatures provide an excellent location for disease and insect breeding work in small grain production
- Greenhouse facilities and station lands are a key component in the identification of high value specialty crops for farmers to use in diversifying operations

**Station Statistics**

**Staff:** 8

**Management Units:** Field Crops  
 Horticultural Crops  
 Tobacco

**Buildings:** 18

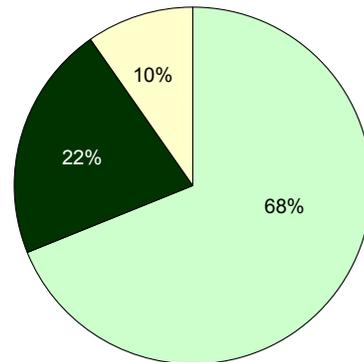
**Research Program**

Project Leaders (#): 18  
 Ongoing Projects (#): 72  
 Focus: Brambles, Corn, Flue-cured, Burley, and Dark Air-Cured Tobacco, Melons, Watermelons, Sweet Potatoes, Lettuce, Cabbage, Squash, Cucumbers

**Acres:**

Station Total		515 .53 ac.
Field Crops	75*	
Corn	4	
Soybeans	4	
Tobacco	22	
Wheat	45	
Small Fruits		0.5
Vegetables		41*
Rotational Crops		302*
Irrigation Ponds		16
Woodlands		111
Infrastructure		50

*\*includes double cropping*



■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

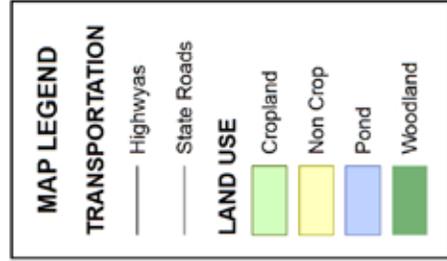
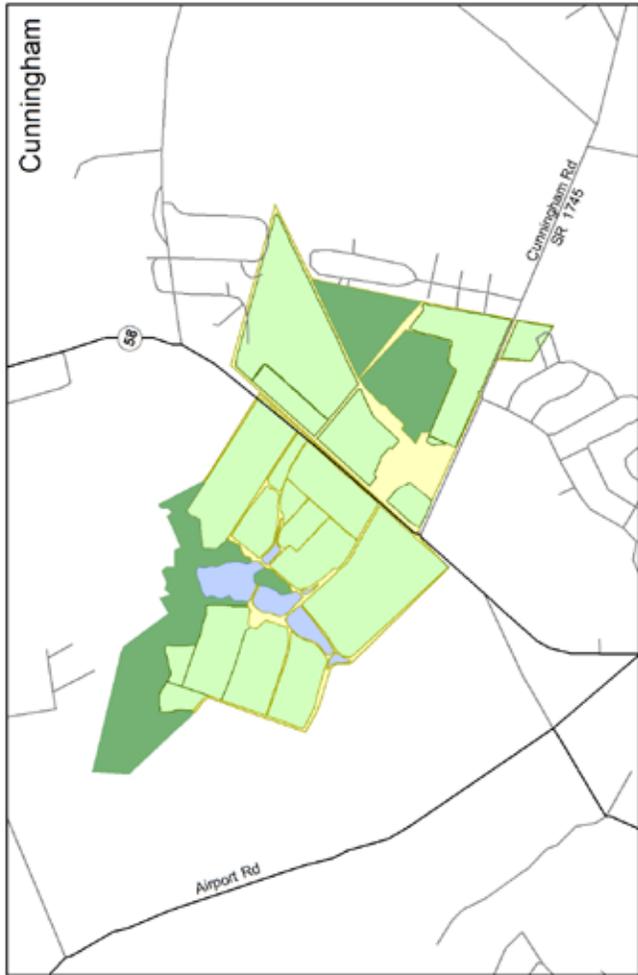
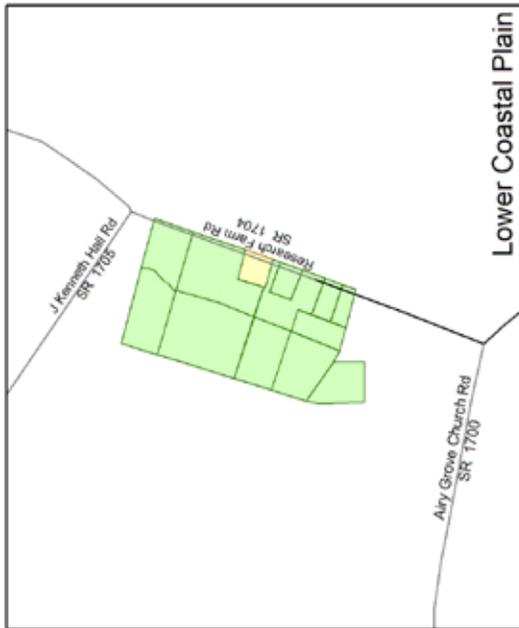
**Station Improvements:**

- Renovation of main facilities and barns
- Recent Equipment Purchases - 4 row transplanter, 4 row spray boom, 15-passenger van, irrigation drag hose

**Station Events:**

- Fields Days – Burley, Melon, Lettuce Cold Crop and Specialty Crops
- Tours – Tobacco, Cotton, National Soybean, Melon, Neuse Enterprises, local senior citizens and Lenoir Community College Horticulture Class,
- Training – NRCS, SCP Agents, Small Grain

**CUNNINGHAM  
LOWER COASTAL PLAIN  
RESEARCH STATION**  
Lenoir County, North Carolina



Prepared By: Deborah Robertson  
Date Prepared: January 23, 2008

## HORTICULTURAL CROPS RESEARCH STATION (NCDA&CS)

### Location

**City:** Clinton  
**County:** Sampson



### Background:

- Established in 1970
- Primary site for development of sweetpotato varieties currently planted in the US including: Jewel (1971), Pope (1982), White Delite (1987), Carolina Ruby and Carolina Rose (1998).

### Unique Characteristics:

- Largest and most comprehensive cucurbit and sweet potato breeding program and post harvest storage research
- Lead site for plasticulture and fertigation research important to the future of vegetable production

### Station Statistics

**Staff:** 13

**Management Units:** Horticultural Crops

**Buildings:** 15

#### Research Program

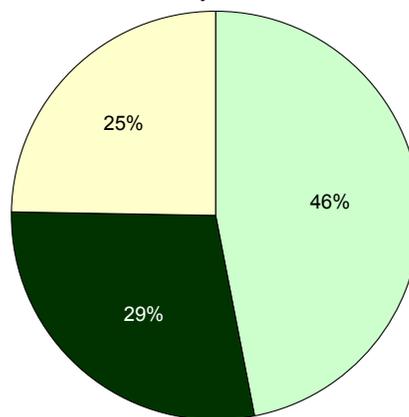
Project Leaders (#): 15

Ongoing Projects (#): 30

Focus: Cucumber, Melons, Sweet Potatoes, Peppers, Corn, Blueberries, Grapes, Strawberries, Watermelon, Tomatoes, Soybeans

### Acres:

Station Total		349.18 ac.
Field Crops	22	
Soybeans	18	
Wheat	4	
Small Fruits	3	
Vegetables	90	
Ornamentals	2	
Rotational	39.38	
Irrigation Ponds	6.74	
Woodlands	99.52	
Infrastructure	86.54	



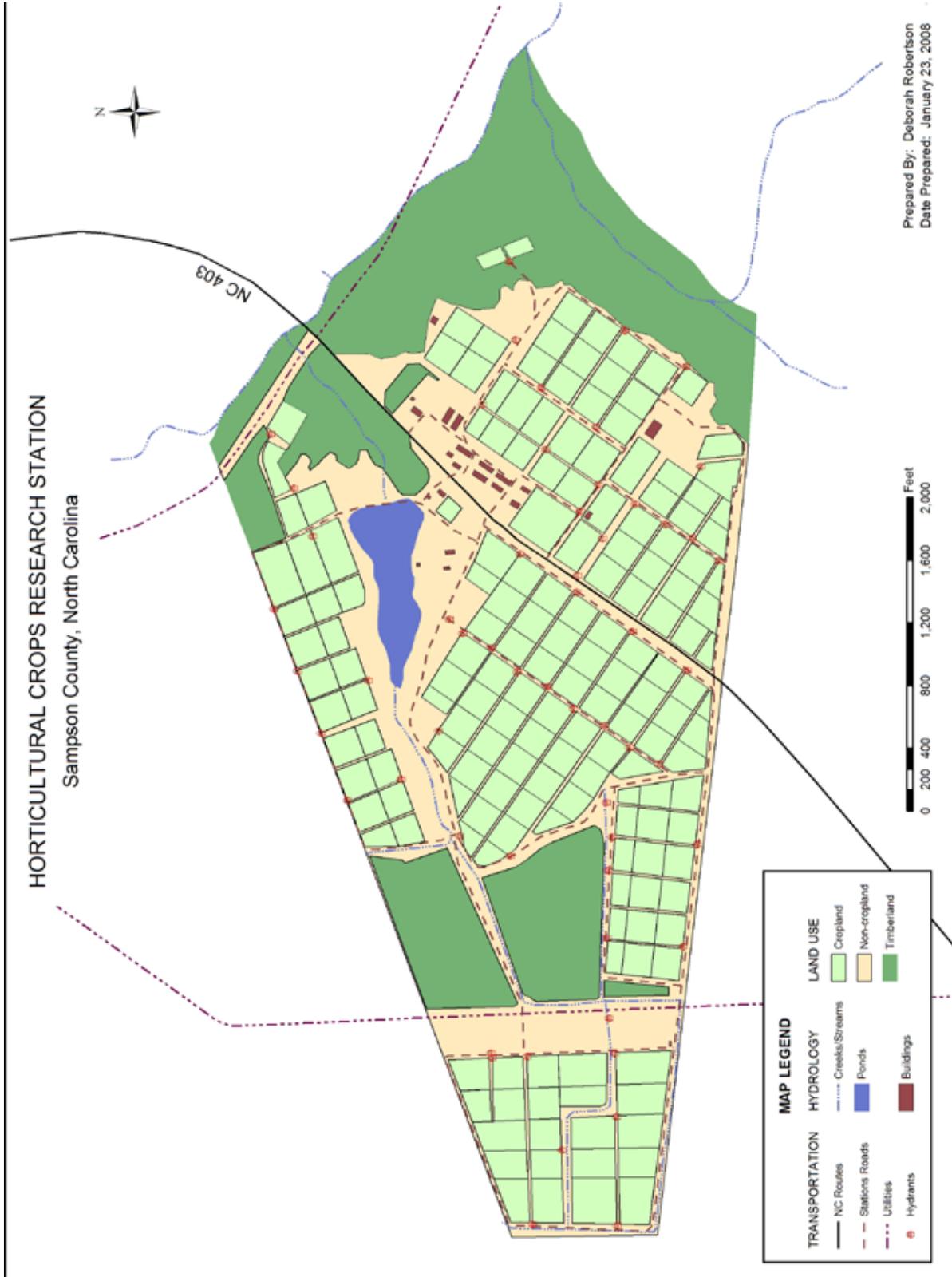
■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

### Station Improvements:

- Purchase and installation of 3 lateral move irrigation systems
- Upgraded post-harvest facilities for sweet potatoes
- Installation of 5 additional high efficient sweet potato curing rooms
- Upgraded pesticide handling storage area
- Second greenhouse installation in progress
- Completion of underground irrigation connector line for water conservation

### Station Events:

- Field Day - Sweet Potato
- Training – Mount Olive College soil class
- Tours/Meetings - Disease management in vegetable production



**MOUNTAIN HORTICULTURAL CROPS RESEARCH STATION (NCSU)**

**Location**

**City:** Mills River  
**County:** Henderson



**Background:**

- Established in 1959
- Tomato research, conducted since 1961, includes the development of methods for managing early blight, late blight, bacterial canker, bacterial speck and Verticillium Wilt

**Unique Characteristics:**

- One of the largest greenhouse complexes in the state for conducting research in greenhouse and nursery crops
- Vital service to farmers in Henderson County which ranks second in the state in cash farm receipts (1<sup>st</sup> in vegetables, fruits and nuts and 2<sup>nd</sup> in greenhouse and nursery crops).

**Station Statistics**

**Staff:** 14

**Management Units:** Horticultural Crops

**Buildings:** 21

**Research Program**

Project Leaders (#): 28

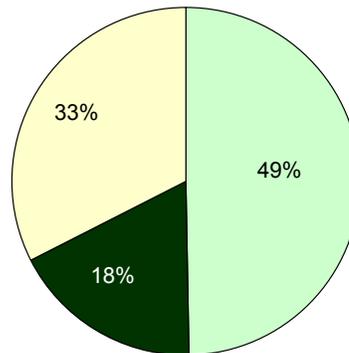
Ongoing Projects (#): 69

Focus: Tomatoes, Ornamentals, Apples, Peaches, Strawberries, Blueberries, Brambles, Peppers, Cucurbits, Soybeans, Corn, Aquaculture, Greenhouse Production

**Acres:**

Station Total		377 ac.
Field Crops	23*	
Corn	21	
Soybeans	2	
Pasture/Hay	67	
Small Fruits	4	
Fruit Trees	35	
Vegetables	35*	
Ornamentals	15*	
Irrigation Ponds	3	
Woodlands	67	
Infrastructure	123	
Organic	4	
Plant Structures	1	
(Leased Land)	15	

*\*includes double cropping*



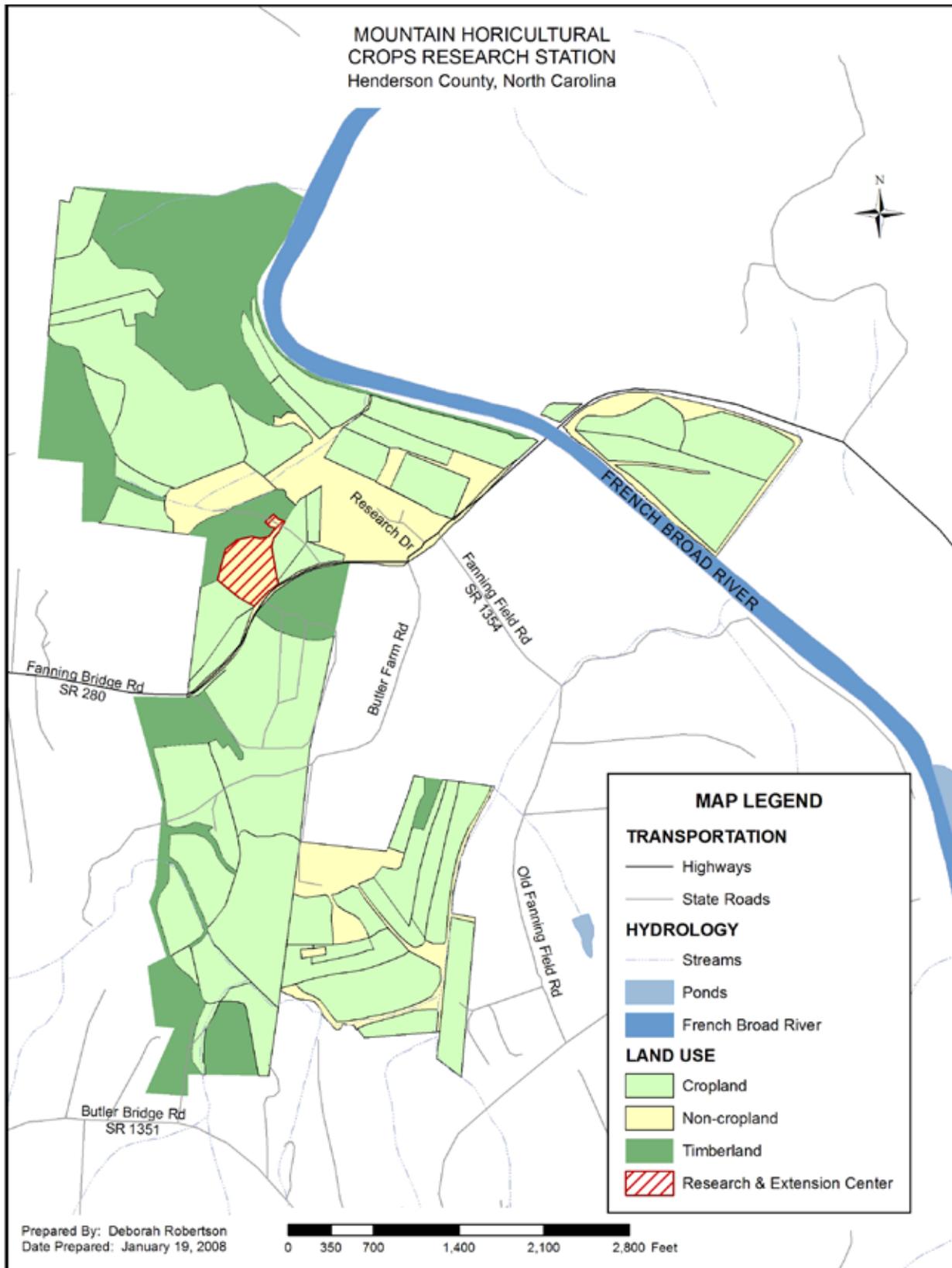
RESEARCH FORESTRY INFRASTRUCTURE

**Station Improvements:**

- Equipment upgrades - orchard sprayer, dump wagon, small tractor, vegetable seeder, soil mixer
- New septic line to the Entomology lab
- 3 bay 'Haygrove' tunnel for bramble research
- New produce grading machine to accommodate increases in vegetable research.

**Station Events:**

- Field Days - Fresh Market Tomato and Vegetable and Fruits
- Workshops – NC Irrigation Society and Septic Tank demo, sprayer and irrigation demo
- Training - Haygrove Tunnel construction, pesticide inspection
- Tours – schools, Master Gardeners, various associations, foreign visitors tour



## MOUNTAIN RESEARCH STATION (NCDA&CS)

### Location

**City:** Waynesville  
**County:** Haywood



### Background:

- Established in 1944
- Burley tobacco trials resulted in the release of 13 virus-resistant varieties, saving producers tremendous expense while increasing yield and quality.

### Unique Characteristics:

- Progeny testing on 40+ open pollinated families of Eastern White Pines for the commercial production of timber and Christmas Trees
- 20 years of continuous entomology studies on the effects of the Balsam Woolly Adelgid
- Identified as site for organic crop production research in western North Carolina

### Station Statistics

**Staff:** 10

**Management Units:** Livestock/Forages  
 Field Crops  
 Horticultural Crops

**Buildings:** 50

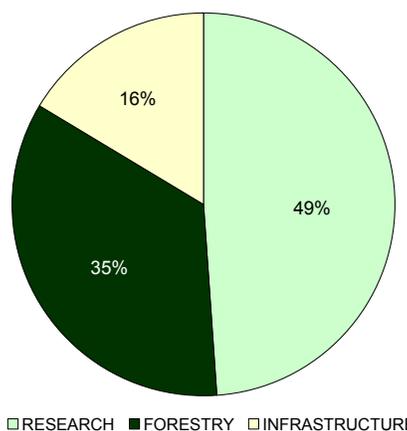
#### Research Program

Project Leaders (#): 20  
 Ongoing Projects (#): 32  
 Focus: Specialty Crops, Christmas Trees, Heirloom Tomatoes, Forages, Beef, Wheat, Corn, Burley Tobacco, Alternative Crops, Bull Test

#### Acres:

Station Total	406.75 ac.
Field Crops	32.1
Burley Tobacco	3.55
Wheat	16.2*
Corn	12
Biofuel Feedstocks	0.35
Pasture/Hay	152.77
Vegetables	6.1
Ornamentals	4.2
Rotational	19.09
Irrigation Ponds	.5
Woodlands	140.65
Infrastructure	66.89

\* includes double cropped

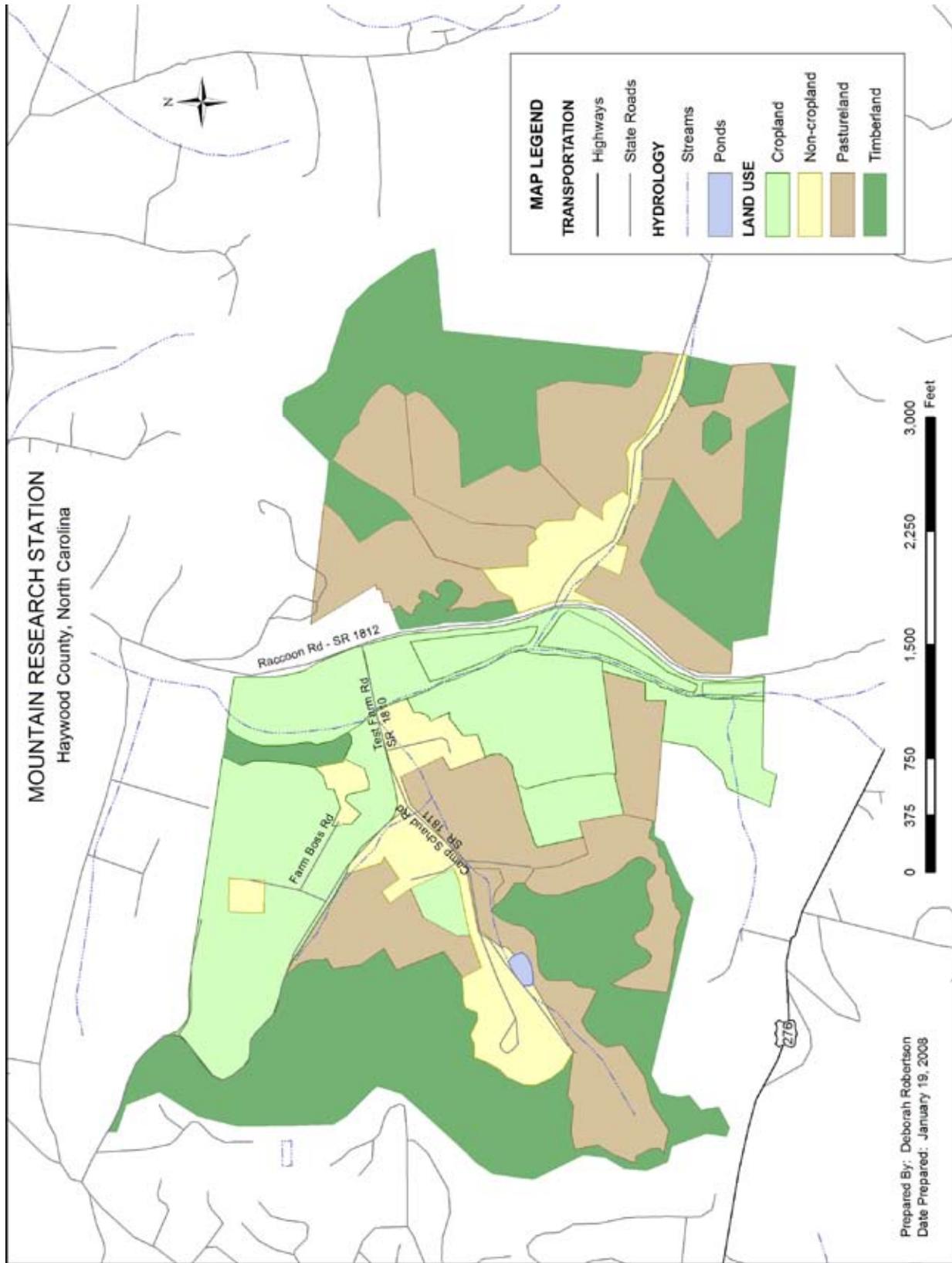


### Station Improvements:

- Construction of 2 single tier Burley Tobacco curing structures and livestock handling chute
- Renovation of barns, shop, dwellings and office
- Purchase of a new crowding tub, palpation and squeeze chute
- Construction of a 250-ton trench silo

### Station Events:

- Field Days - Burley Tobacco, Hay, Heirloom Tomato, Lettuce, Grazing, Pumpkin
- Workshops - Master Gardener's Program, Beekeeping, Waste Management, Grazing
- Training - Extension Agent, FFA Livestock and Soil Judging Teams, drought relief, NCSU Vet School, NRCS regional training
- Tours – pre-schools, local schools, churches, cattlemen groups, leadership and youth programs



**NC A&T UNIVERSITY FARM**

**Location**

**City:** Greensboro  
**County:** Guilford



**Background:**

- Initial acquisition between 1932-1938, construction starting early 1950
- Major renovation of infrastructure, equipment purchase and administrative structure starting in 2001

**Unique Characteristics:**

- Located three miles from main campus, providing excellent opportunity to serve as working laboratory for The School of Agriculture & Environmental Sciences
- Diverse operation, consisting of swine, beef, poultry, dairy, horticulture, sheep, goat and field crops
- Focus on research and demonstrations to benefit, small, limited resource and minority farmers

**Station Statistics**

**Staff:** 16

<b>Management Units:</b>	Livestock	Herd Size(#)
	Dairy	50
	Beef	37
	Swine	250
	Goat	45
	Sheep	25
	Poultry	250- 8500(grow out program)
	Equine	2
	Field Crops	
	Horticulture Crops	

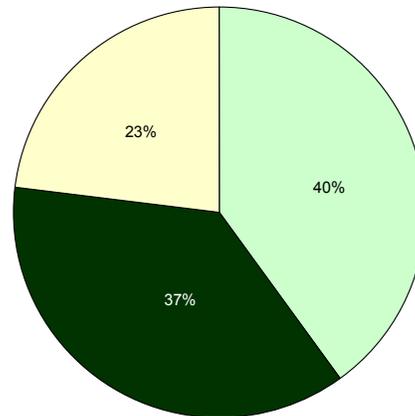
**Buildings:** 30

**Research Program**

Project Leaders (#): 15  
 Ongoing Projects (#): 12  
 Focus: Swine , Poultry, Specialty Crops, Organics, Goats, Waste Management, Constructed Wetlands, Soil Quality

**Acres:**

Station Total:		567 ac
Field Crops	74	
Corn	43	
Soybeans	31	
Fruit Trees	1	
Organics	3	
Horticulture	9	
Pasture/ Hay	125	
Irrigation Ponds	15	
Woodlands	210	
Infrastructure	130	



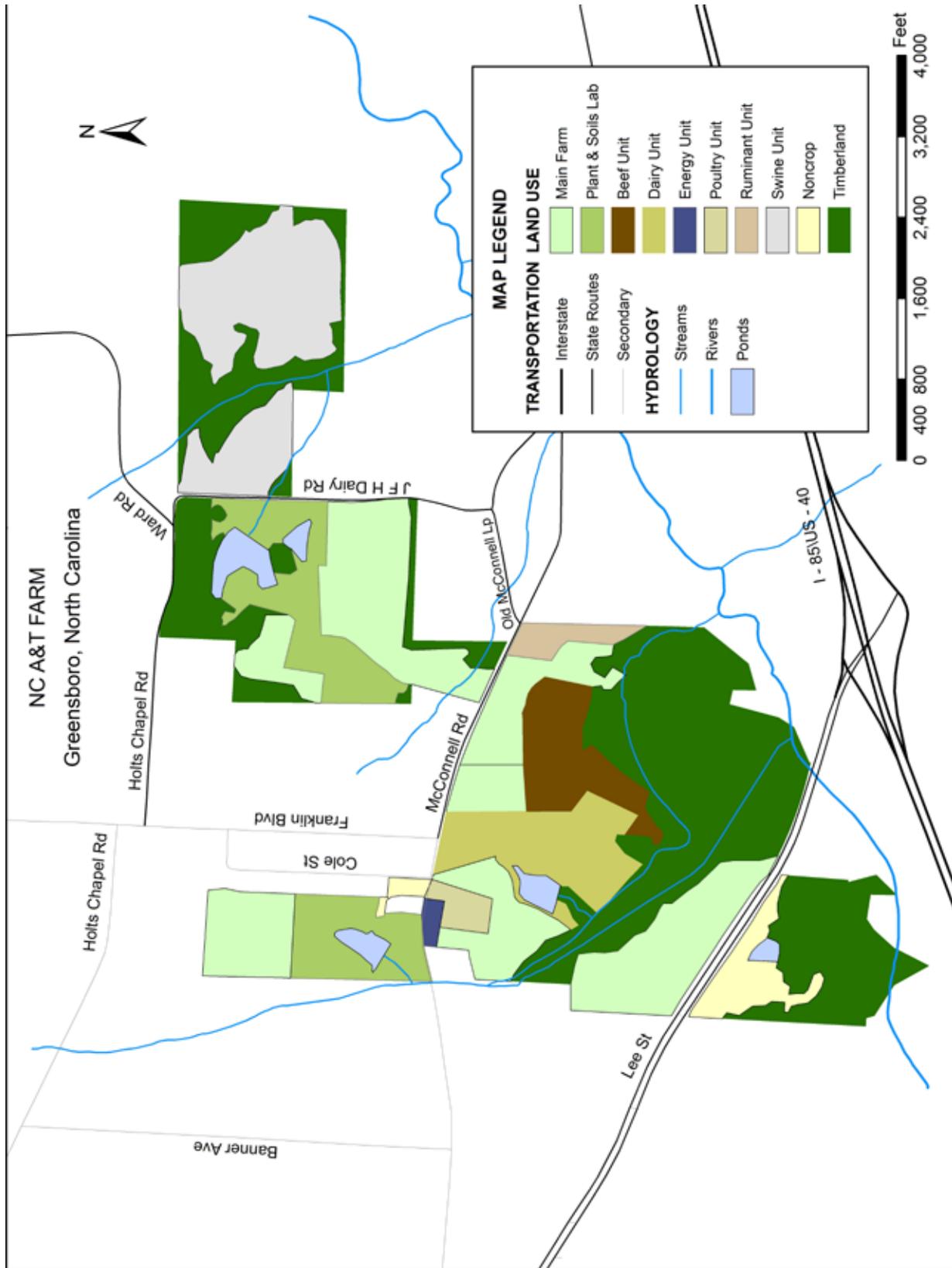
■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

**Station Improvements:**

- New Facilities: Dairy, Poultry, Beef, Farm Shop Complex, Horticulture, Greenhouse, High Tunnels, Weather station, Swine Hoop and pastures, Mushroom Research Facility
- New equipment: tractors, implements, mowers, gators ,tub grinder, balers, waste management system at dairy
- Updated swine facility with crates, floors, automatic feed system, flush system and innovated water treatment system
- Biodiesel, Production Unit

**Station Events:**

- Training – Artificial Insemination in beef , Mushroom production, Agent workshops
- Annual Field Days
- Discovery Ag Program
- Tours-Research Apprentice Program, Recruitment Fest , area high schools , special Interest groups, alumni



## OXFORD TOBACCO RESEARCH STATION (NCDA&CS)

### Location

**City:** Oxford  
**County:** Granville



### Background:

- Established in 1912
- Research resulted in the development of the varieties of tobacco resistant to Black Shank and Granville Wilt
- The first flue-cured rack tobacco barn and curing boxes were developed at the Station

### Unique Characteristics:

- Station's 92 year history closely parallels the history of flue-cured tobacco technology
- Soils are representative of those found in the "Old Tobacco Belt"
- Critical location for expansion of biotechnical research with plant proteins
- Key site for expansion of biofuel feedstock crop research

### Station Statistics

**Staff:** 13

**Management Units:** Field Crops  
 Bio-fuel Feedstocks

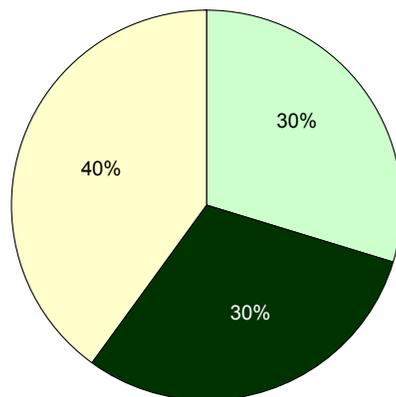
**Buildings:** 34

#### Research Program

Project Leaders (#): 8  
 Ongoing Projects (#): 29  
 Focus: Cucumbers, Melons, Paulownia Trees, Tobacco, Tobacco Diseases, Tobacco Germplasm. Blackberries, Blueberries, Raspberries, Bio-fuel Feedstocks

#### Acres:

Station Total	426 .44 ac.
Field Crops:	59
Flue-cured Tobacco	20
Black Shank Nursery	5
Bacterial Wilt Nursery	6
Transgenic Tobacco	2
Wheat	18
Cucurbits	2
Bio-fuel Feedstocks	6
Small Fruits	1.25
Ornamental	1
Rotational Cropland	55.88
Irrigation Ponds	9.55
Woodlands	129.32
Infrastructure	170.44



□ RESEARCH ■ FORESTRY □ INFRASTRUCTURE

### Station Improvements:

- Transfer of research facilities including labs and greenhouse from USDA
- Up-graded capacity to irrigate with addition of two irrigation reels
- Up-graded small glass greenhouse for an environmental study
- Retro-fitted part of large greenhouse for the production of transgenic tobacco plants
- Purchased and installed trickle irrigation system for bramble and blueberry research

### Station Events:

- Biofuels Center of North Carolina moved into facilities (2008)
- Biofuels Strategic Planning Group visit facilities to discuss future plans for NC Biofuels Campus



## PEANUT BELT RESEARCH STATION (NCDA&CS)

### Location

**City:** Lewiston Woodville  
**County:** Bertie



### Background:

- Established in 1952
- All components necessary for the modernization of peanut harvesting including digging, pickup and trashing were researched at the station
- At least 14 peanut varieties have been released since 1959

### Unique Characteristics:

- Located in the heart of peanut producing region of North Carolina with soils and weather conditions adapted to the production of peanuts. All peanut varieties released by NCSU over the last 20 years have come from the Peanut Belt Station
- One of three sites in the state for testing Phosphorus requirements and one of two sites in the state for testing Potassium requirements
- The NCSU Department of Plant Pathology has monitoring equipment in peanut fields to monitor soil temperature moisture and well as moisture on leaves. This data is coupled with data taken from on site weather station to generate an advisory for local farmers on when to best apply fungicides to their crops.

### Station Statistics

**Staff:** 9

**Management Units:** Field Crops

**Buildings:** 23

**Research Program**

Project Leaders (#): 17

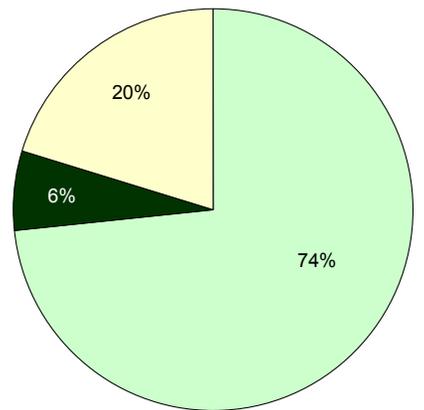
Ongoing Projects (#): 161

Focus: Peanuts, Corn, Cotton, Wheat, Soybeans, Cukes/Melons, Snapbeans, Sorghum, Sage, Fescue

### Acres:

Station Total		371.98 ac.
Field Crops	150.64*	
Peanuts	67.32	
Corn	35.3	
Cotton	29.18	
Cukes/ melons	1.5	
Snapbeans	0.32	
Soybean	7.95	
Fescue	0.5	
Sage	0.33	
Wheat	8.24	
Cedar Trees [for seed]	1.5	
Rotational Crops	123.1*	
Irrigation Ponds	7.0	
Woodlands	24	
Infrastructure	75.48	

\*includes double cropping



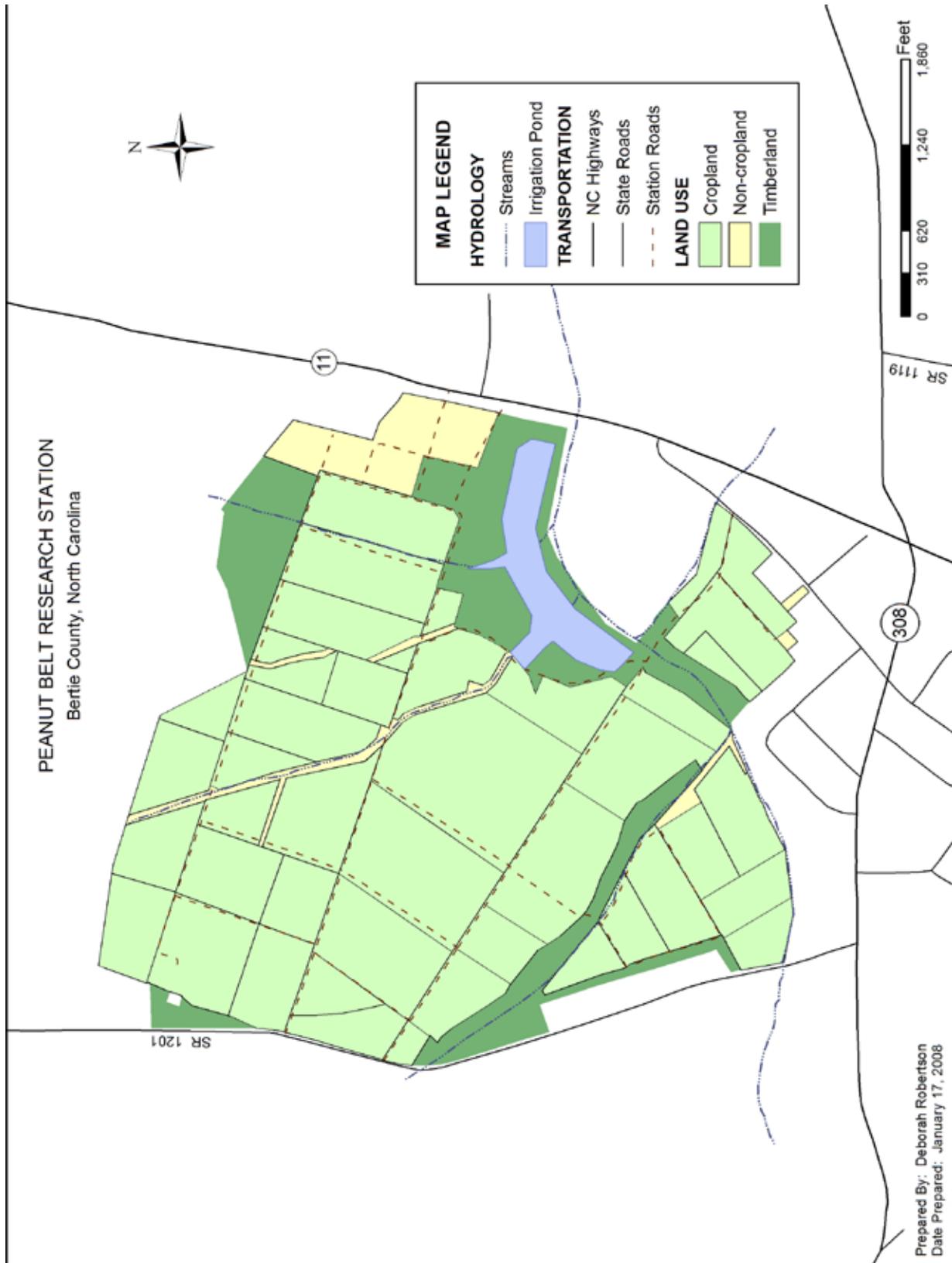
■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

### Station Improvements:

- Irrigation pond increased and improved
- Equipment Purchases - JD Gator with sprayer attachment, GPS guidance/lightbar system, PTO irrigation pump, 4 Row peanut digger

### Station Events:

- Field Day - Peanut
- Training - NCSU Extension Service and NCSU graduate course
- Tours - Agricultural Representatives from Ghana, Monsanto researchers, American Peanut Research and Education Society
- Meets - North Carolina Peanut Growers Association



**PIEDMONT RESEARCH STATION (NCDA&CS)**

**Location**

**City:** Salisbury  
**County:** Rowan



**Background:**

- Established in 1953
- Poultry research on layers provided a biological basis for Chemoprevention of Ovarian Cancer in women
- Cattle diets developed utilizing waste cotton fiber from spinning mills, reducing the amount of waste going to landfills and identified a cheap feed source.

**Unique Characteristics:**

- The only facility with commercial poultry research including work with broiler breeders, broilers, incubation, and commercial layers as well as using spent fowl in medical research to develop an avian model to increase the understanding and ultimate reduction of Ovarian Cancer
- Dairy facility conducting applied and basic work to increase the efficiencies of dairy production and reduce the impact of the dairy activities on the surrounding area by improving nutrient management

**Station Statistics**

**Staff:** 29

**Management Units:**

Livestock	Herd Size (#)
Dairy	316
Poultry	12904
Horticultural Crops	
Field Crops	

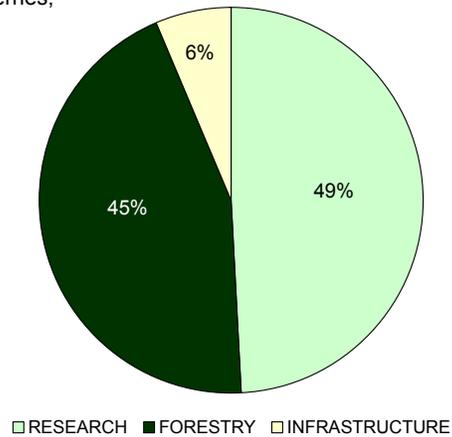
**Buildings:** 44

**Research Program**

Project Leaders (#): 19  
 Ongoing Projects (#): 35  
 Focus: Poultry, Dairy, Corn, Soybeans, Hay, Small Grain, Wheat, Tomatoes, Strawberries, Cane Berries, Blueberries, High Tunnel Production

**Acres:**

Station Total		1036.2 ac.
Field Crops	25	
Wheat	15	
Canola	3	
Soybeans	2	
P & K (Soil Science)	2	
Ground cover	3	
Pasture/Hay	185	
Small Fruits	10	
Vegetables	10	
Rotational	171	
Irrigation Ponds	8	
Woodlands	462.2	
Infrastructure	165	

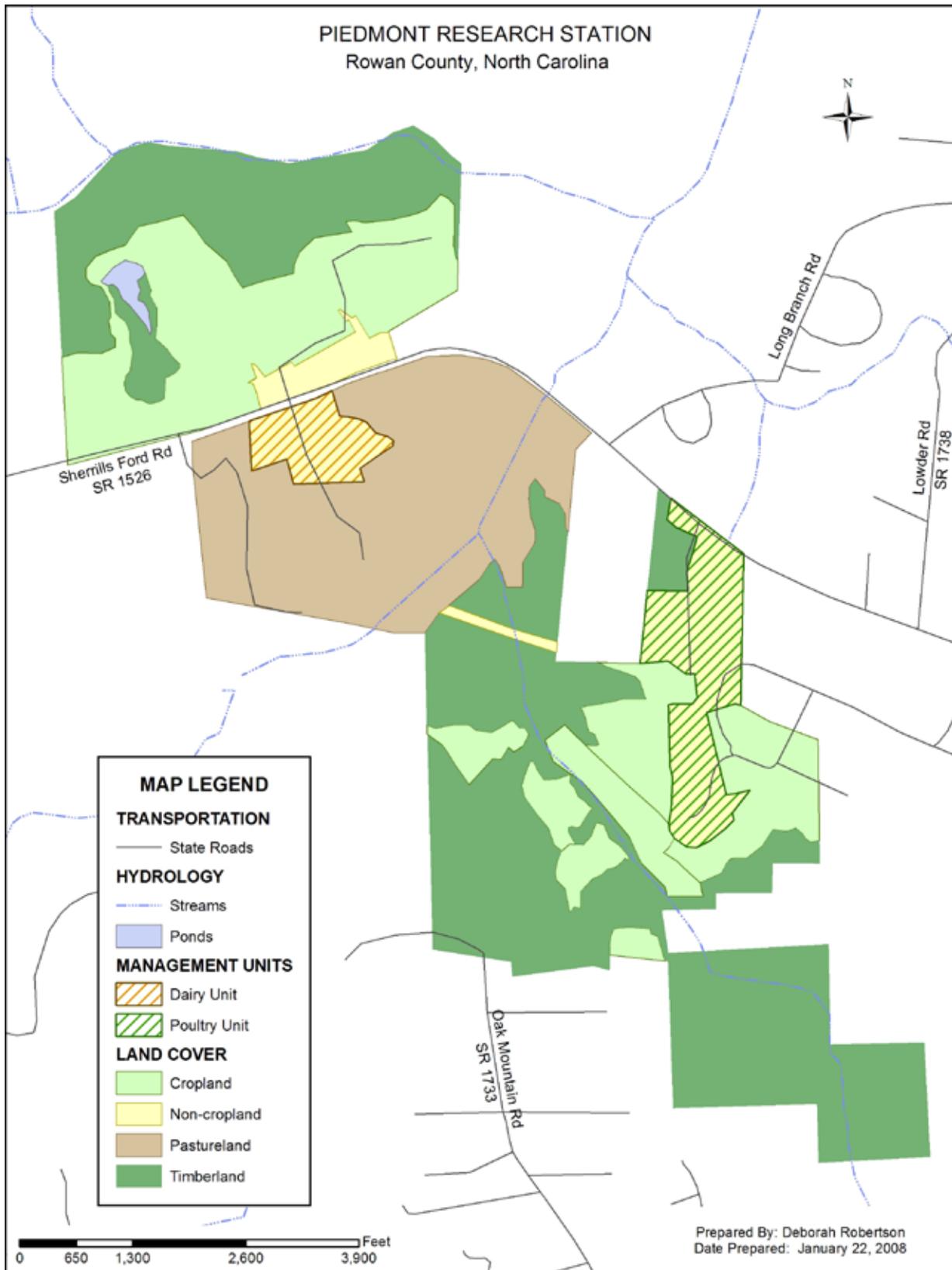


**Station Improvements:**

- 22,500 sq. ft. of high tunnel greenhouses
- Upgraded dairy facility including onsite laboratory
- Upgraded poultry research facility
- Greenhouses for supporting NC Research Campus at Kannapolis

**Station Events:**

- Field Days – Small Grain & Dairy
- Workshops – Bio-Fuels & Small Grain
- Training: NCDA&CS - ICS
- Training: NCSU – Pesticide, 4-H Judging, NCRS Training
- Youth Programs – District 4-H Event, State FFA Dairy Judging, Poultry Youth Program
- Area & Public Schools – Classroom Visits
- Disaster Recovery – Hay Relief



**SANDHILLS RESEARCH STATION (NCSU)**

**Location**

**City:** Jackson Springs  
**County:** Montgomery



**Background:**

- Established in 1951
- Twenty varieties of peaches have been released to the peach industry as a result of on-site research.

**Unique Characteristics:**

- Deep and extremely uniform sandy soils are highly characteristic of the Sandhills region make site ideal for turfgrass and peach research
- Soil conditions provide ideal environment for drought research, as well as nutrient leaching and plant-water relationship trials.

**Station Statistics**

**Staff:** 11

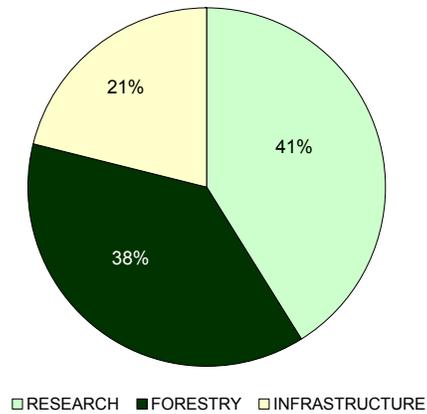
**Management Units:** Horticultural Crops  
Field Crops  
Turfgrass

**Buildings:** 13

**Research Program**  
 Project Leaders (#): 30  
 Ongoing Projects (#): 65  
 Focus: Peaches, Blueberries, Turfgrass, Corn, Soybeans, Caneberries, Peppers, Strawberries, Ornamentals, Peanuts, Sweet Potatoes, Cotton, Rye

**Acres:**

Station Total		516.95 ac.
Field Crops:	99.40	
Corn	24.7	
Cotton	1.0	
Peanuts	2.0	
Rye	36.5	
Soybeans	35.2	
Turf Grass	10.90	
Small Fruits	13.45	
Fruit Trees	33.20	
Vegetables	3.30	
Ornamentals	4.60	
Rotational	29.94	
Irrigation Ponds	17.60	
Woodlands	195.20	
Infrastructure	109.36	



**Station Improvements:**

- Constructed turf equipment storage building and equipment storage
- Installed two linear move irrigation systems
- Added 1,000 feet of underground lines and 12 hydrants to irrigation system
- Upgraded one irrigation pump station
- Upgraded turf irrigation pump station and renovated turfgrass plot irrigation system
- Excavated irrigation pond for more holding capacity.
- Drilled two new wells for drinking water supply as well as limited drip irrigation

**Station Events:**

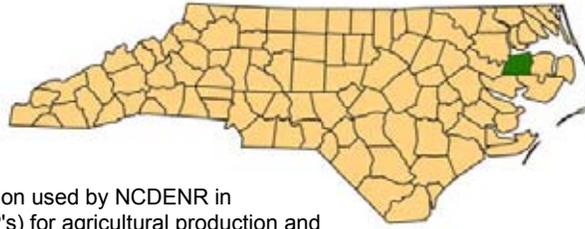
- Field Days – Turfgrass, Small Fruit and Peach
- Training - Pesticide licensing, First Aid/CPR
- Tours - area schools, youth and civic groups, Extension offices, county professionals, agency leaders and local growers



## TIDEWATER RESEARCH STATION (NCDA&CS)

### Location

**City:** Plymouth  
**County:** Washington



### Background:

- Established in 1943
- Long term drainage studies provided information used by NCDENR in developing Best Management Practices (BMP's) for agricultural production and Total Maximum Daily Loads (TMDL) for watersheds in North Carolina

### Unique Characteristics:

- Broad and flat topography, resulting in a shallow water tables causes soil organic matter to be higher than the majority of soils in the remainder of the State
- The breeding program for Irish potatoes is conducted at this location including growing of all material and evaluating each entry for yield and quality
- Rainfall and flat land with a shallow water table dictate that extensive surface drainage is necessary utilizing a system of ditches and canals

### Station Statistics

**Staff:** 21

**Management Units:**

Livestock	Herd Size (#)
Beef	350
Swine	200 (farrow to finish)
Field Crops	
Aquaculture	
Horticultural Crops	
Greenhouse	

**Buildings:** 42

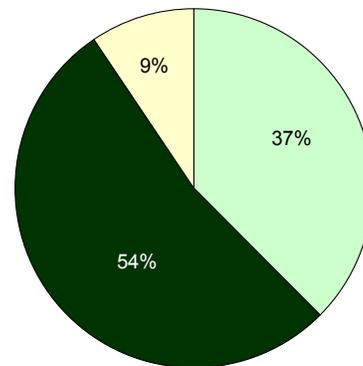
### Research Program

Project Leaders (#): 20  
 Ongoing Projects (#): 56  
 Focus: Soybeans, Corns, Cotton, Aquaculture, Swine, Beef, Irish Potatoes, Rice, Canola, Sweet Sorghum, Small Grains

### Acres:

Station Total	1551.33 ac.
Field Crops	476.5*
Soybeans	164.5
Corn	223.5
Cotton	16
Rice	0.5
Canola	0.5
Sweet Sorghum	6
Small Grains	65.5
Pasture/Hay	183.7*
Vegetables	14.5*
Rotational	272.0*
Aquaculture Ponds	13.0
Woodlands	799.27
Infrastructure	144.44
Leased:	40.04

\*includes double cropping



■ RESEARCH ■ FORESTRY □ INFRASTRUCTURE

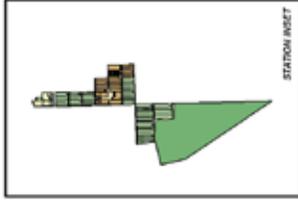
### Station Improvements:

- Added small ditches and land forming to enhance surface drainage
- Upgrade fencing to control wildlife and reduce pressure on crops and research efforts

### Station Events:

- Field Day – Organic Production and Farm Safety
- Training – Pesticide School, Septic System Demo and Decentralized Wastewater class
- Meetings - 4-H Youth Development, Soil & Water Conservation, Blackland Farm Managers, County Extension Service
- Local Events - Relay for Life

**TIDEWATER  
RESEARCH STATION**  
Washington County  
North Carolina



**LEGEND**

**TRANSPORTATION**

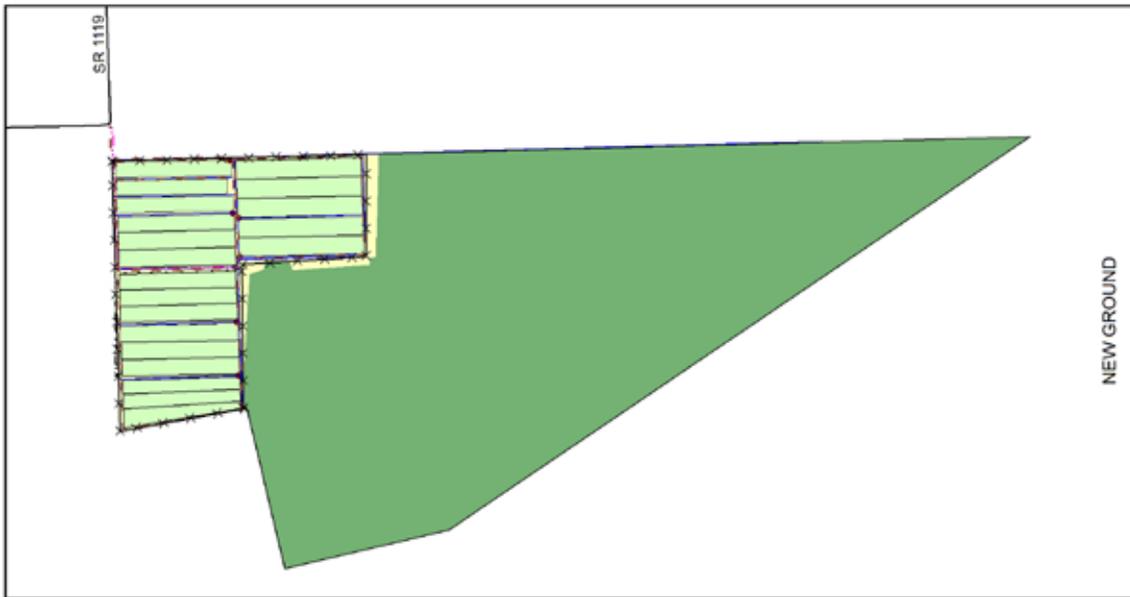
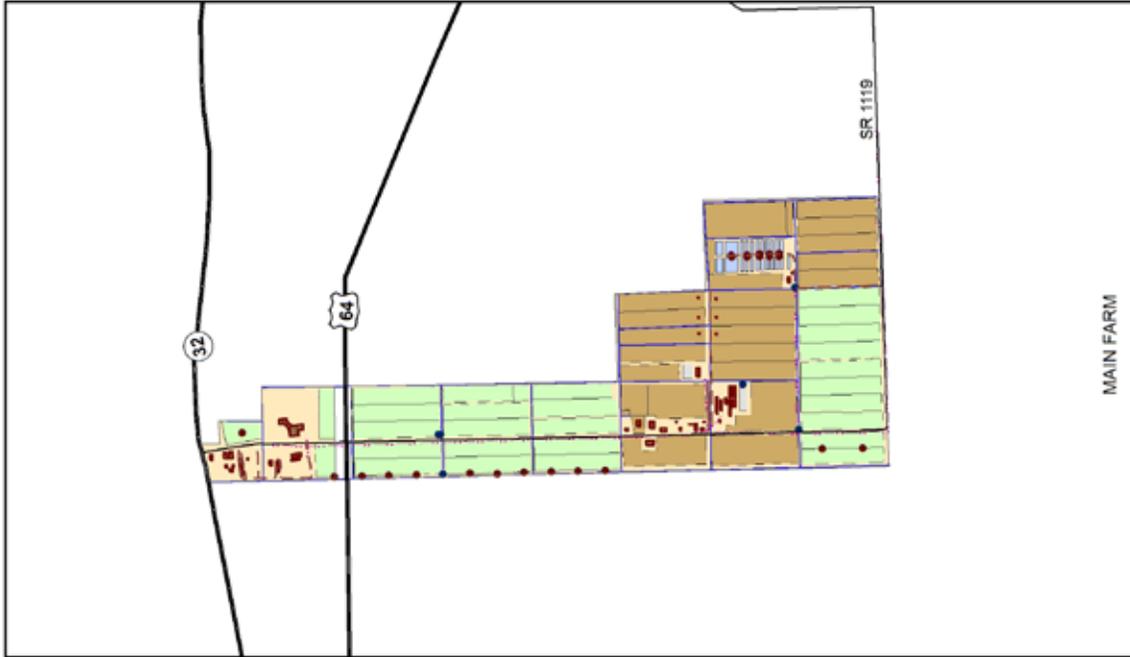
- NC Highways
- State Routes
- - - Stations: Roads

**IRRIGATION**

- Hydrants
- Pumps
- Drainage Ditches
- Power Line
- Buildings

**LAND USE**

- Cropland
- Pastureland
- Aquaculture
- Non-cropland
- Lagoon
- Timberland



Prepared By: Deborah Robertson  
Date Prepared: January 18, 2008

**UMSTEAD RESEARCH FARM (NCDA&CS)**

**Location**

**City:** Butner  
**County:** Granville



**Background:**

- Property acquired by State of North Carolina in 1948, portions of property transferred to NCDA&CS in 1974
- Cucumber breeding trials were conducted for 6 years resulting in the release of 7 hybrid and 5 inbred lines. Among the hybrid lines were the only varieties with nematode resistance.

**Unique Characteristics:**

- Produce of forages for Research Stations and land resource for expansion and support of Beef Research Center
- Support of biofuels feestock research at the Oxford Tobacco Research Sation
- Conservation easement to protect Lake Holt and 300 acre easement to protect a large population of the federally endangered Smooth coneflower

**Station Statistics**

**Staff:** 1 (manage with Oxford Tobacco Research Station staff)

**Management Units:** Fields Crops  
Pasture

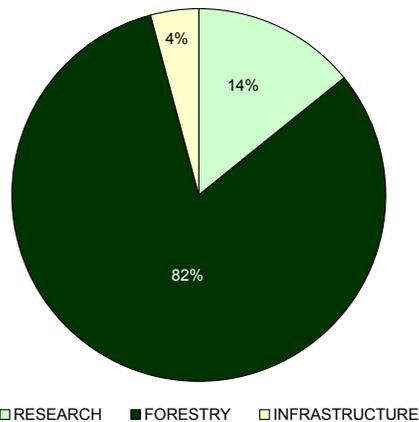
**Buildings:** 20

**Research Program**

Project Leaders (#): 4  
 Ongoing Projects (#): 8  
 Focus: Forestry, Water Quality, Bio-fuel Feedstocks, Weed Management  
 Forage Production

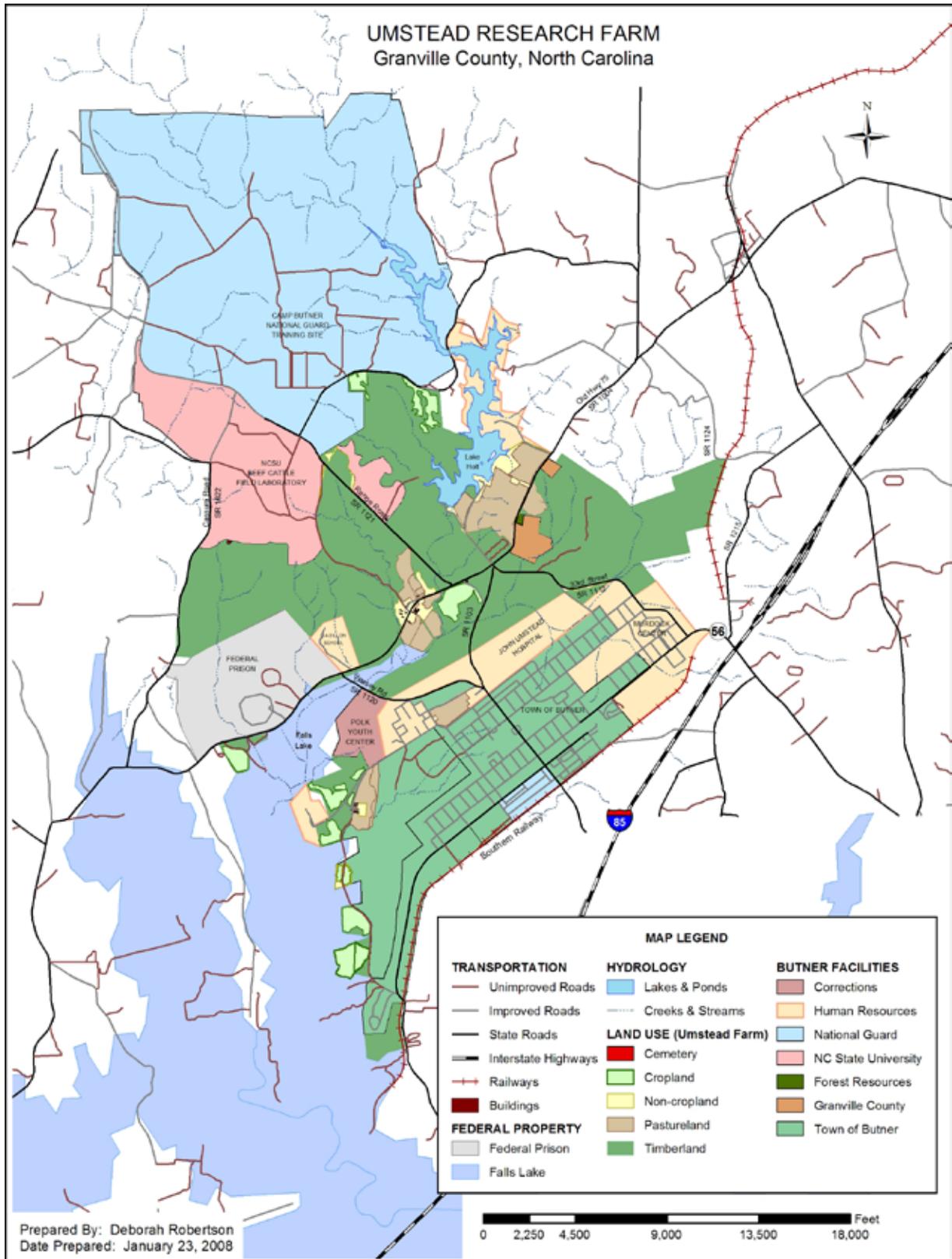
**Acres:**

Station Total		4519.55 ac.
Field Crops	147	
Barley	3	
Camelina	2	
Grain Sorghum	10	
Hulless Barley	3	
Millet	4	
Oats	20	
Soybeans	20	
Sunflowers	10	
Wheat	75	
Wildflower seed production	63	
Pasture/Hay	388.13	
Irrigation Ponds	8	
Woodlands	3730.12	
Infrastructure	183.3	



**Station Improvements:**

- Transitioned from a dairy into goat and field crop research
- Installed woven wire fence to accommodate new goat research
- Transformed nutrition barn into site for Annual Meat Goat show and sale
- Acquired field equipment needed for installation of plot research
- Up-graded forage equipment to better manage the production of hay for other stations
- Purchased a combine (joint venture with Oxford)
- Replaced culverts on Huff Rd. to provide better access to DOT
- Designated two forest tracts for long term BMP study



**UPPER COASTAL PLAIN RESEARCH STATION (NCDA&CS)**

**Location**

**City:** Rocky Mount  
**County:** Edgecombe



**Background:**

- Established in 1903
- Over half of the tobacco acreage in North Carolina and South Carolina is planted to Black Shank resistant varieties; all developed in the Black Shank nurseries on the UCPRS.

**Unique Characteristics:**

- The range of soil textures from deep loamy sands to sandy clay to silt loams, provide effective evaluation of the efficacy of various herbicides and herbicide combinations leading to the development of highly effective weed management strategies for cotton, corn, peanuts, soybeans and tobacco
- Abundant water supply, even in times of drought

**Station Statistics**

**Staff:** 9

**Management Units:** Field Crops  
Tobacco

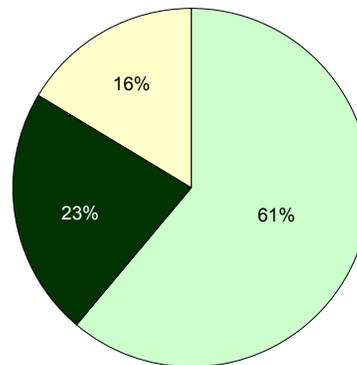
**Buildings:** 28

**Research Program**

Project Leaders (#): 22  
 Ongoing Projects (#): 150  
 Focus: Peanuts, Cotton, Soybeans, Corn, Tobacco, Cucurbits, Small Grain, Switchgrass, Trees, Weed Management

**Acres:**

Station Total		441.92 ac.
Field Crops	193	
Corn	65	
Soybean	20	
Cotton	65	
Peanut	35	
Small grain	8	
Tobacco	27	
Vegetables	1	
Switchgrass	7	
Rotational	26	
Irrigation Ponds	16	
Woodlands	100	
Infrastructure	71.92	



■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

**Station Improvements:**

- Renovation – Dwellings and Maintenance Shop
- New Burley Curing Shelter, Greenhouse for tobacco transplant production and Clean Room for Pesticide Storage and Loading Facility
- Equipment purchases - Emergency Generators, Traveler irrigation systems, backup irrigation pump, 4-wheel tractor, high-clearance tractor
- Installation of natural gas lines to all facilities

**Station Events:**

- Field Days - Cotton
- Tours - Annual Tobacco, Annual Weed Management, Burley Tobacco
- Training - Soil Classification, Extension Agents, Entomology, Cotton, Peanut & Tobacco Production
- Visits - Seed Company and Agricultural Chemical Reps



**UPPER MOUNTAIN RESEARCH STATION (NCDA&CS)**

**Location**

**City:** Laurel Springs  
**County:** Ashe



**Background:**

- Established in 1944
- A genetic clone bank for Fraser firs was established and is planted at this station. Upper Mountain also holds the only planted range-wide seed source of the Carolina Hemlock in the United States.

**Unique Characteristics:**

- The elevation above 3200 feet provides climatic conditions not available at any other location across the state; High elevation essential for studying Frazier Fir production
- Current research on day-neutral strawberries and primacane raspberries has allowed agricultural producers in this area to diversify their operations.

**Station Statistics**

**Staff:** 11

**Management Units:**

Livestock	Herd Size (#):
Goats	88
Cattle	193
Llamas	2
Field Crops	

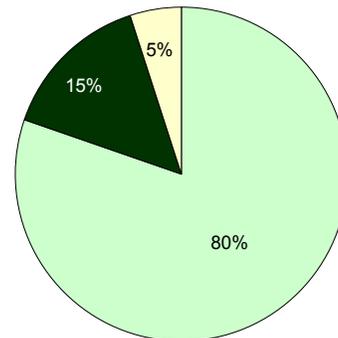
**Buildings:** 33

**Research Program**

Project Leaders (#): 20  
 Ongoing Projects (#): 53  
 Focus: Beef, Goats, Christmas Trees, Strawberries, Raspberries, Blackberries, Blueberries, Burley Tobacco, Small grains, Mushrooms, Organics, Ornamentals

**Acres:**

Station Total	452.81 ac
Field Crops	11.5
Tobacco	5.5
Small grains	2
Corn	2
Lettuce	2
Horticulture crops	15.35
Pasture/Hay	317.65
Christmas trees	14.5
Rotational	3.9
Woodlands	67.75
Infrastructure	22.16



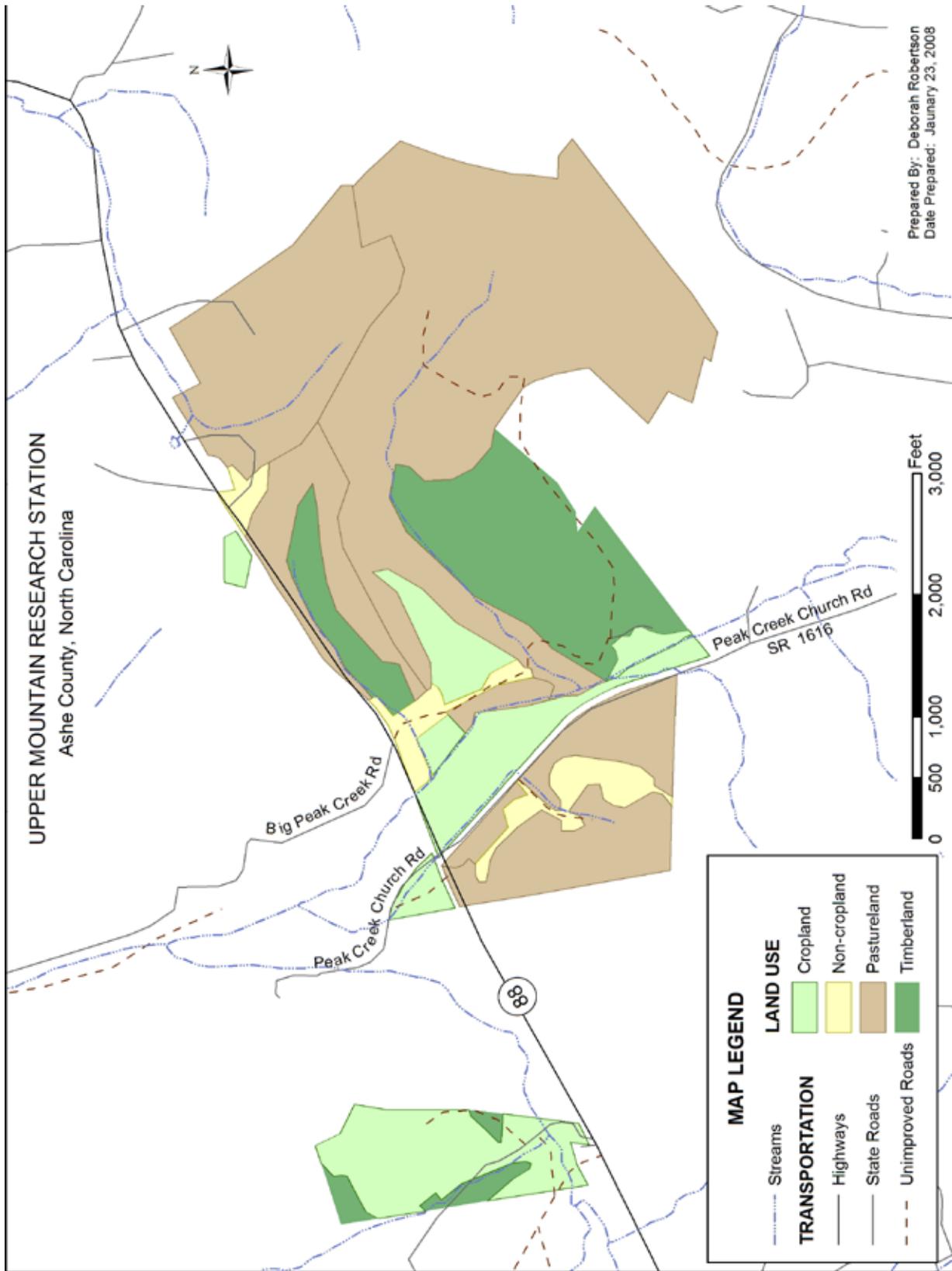
■ RESEARCH ■ FORESTRY □ INFRASTRUCTURE

**Station Improvements:**

- New greenhouse and curing structures for tobacco production
- Renovation of animal handling facilities
- New multi-purpose building for strawberries and tobacco grading

**Station Events:**

- Field Days – Specialty Crops
- Tours - Randolph County Cattleman, Master Gardener, professor from Chile, Appalachian State University staff, researchers from Czech Republic
- Workshops – Christmas Tree Grafting, Soil Science Dept and Organic/Rotational Cover Crop
- Training - Safety Day local Ag classes and rescue personnel
- Disaster Recovery – Hay Relief



**UPPER PIEDMONT RESEARCH STATION (NCSU)**

**Location**

**City:** Reidsville  
**County:** Rockingham



**Background:**

- Established in 1959
- The only location in North Carolina that has been used to develop an alternative air-cured tobacco industry for producing tobaccos that are low in the production of nitrosamine, implicated as the agents that are carcinogenic in tobacco

**Unique Characteristics:**

- The only location adjacent to the Yadkin Valley wine grape growing region and host to the only major wine grape research effort in the state
- Rolling hills and some steep slopes provide ideal landscape and climate for cow/calf beef production. Location of the only Registered Angus Beef herd in the system
- Mild winters and short summers make this region very suitable for beef production.

**Station Statistics**

**Staff:** 9

**Management Units:** Livestock      Herd Size (#)  
                                  Beef                      230  
                                  Field Crops

**Buildings:** 42

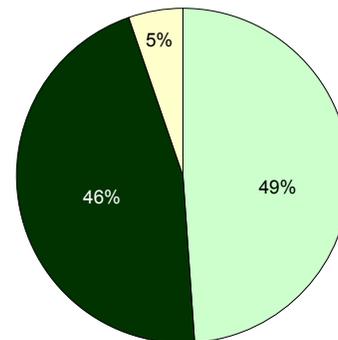
**Research Program**

Project Leaders (#): 17  
 Ongoing Projects (#): 22  
 Focus: Grapes, Beef, Flue-cured, Burley & dark Tobacco, Paulownia Trees, Wheat, Canola, Biofuels, Turf

**Acres:**

Station Total		815.63 ac
Field Crops	80*	
Tobacco	10	
Corn	5	
Biofuels	10	
Wheat	35	
Rye Grass	20	
Pasture/Hay	350*	
Small Fruits	6	
Rotational	35*	
Irrigation Ponds	7.9	
Woodlands	354.52	
Infrastructure	50	
Lease Land	67.59	

*\*supported by leased acreage*



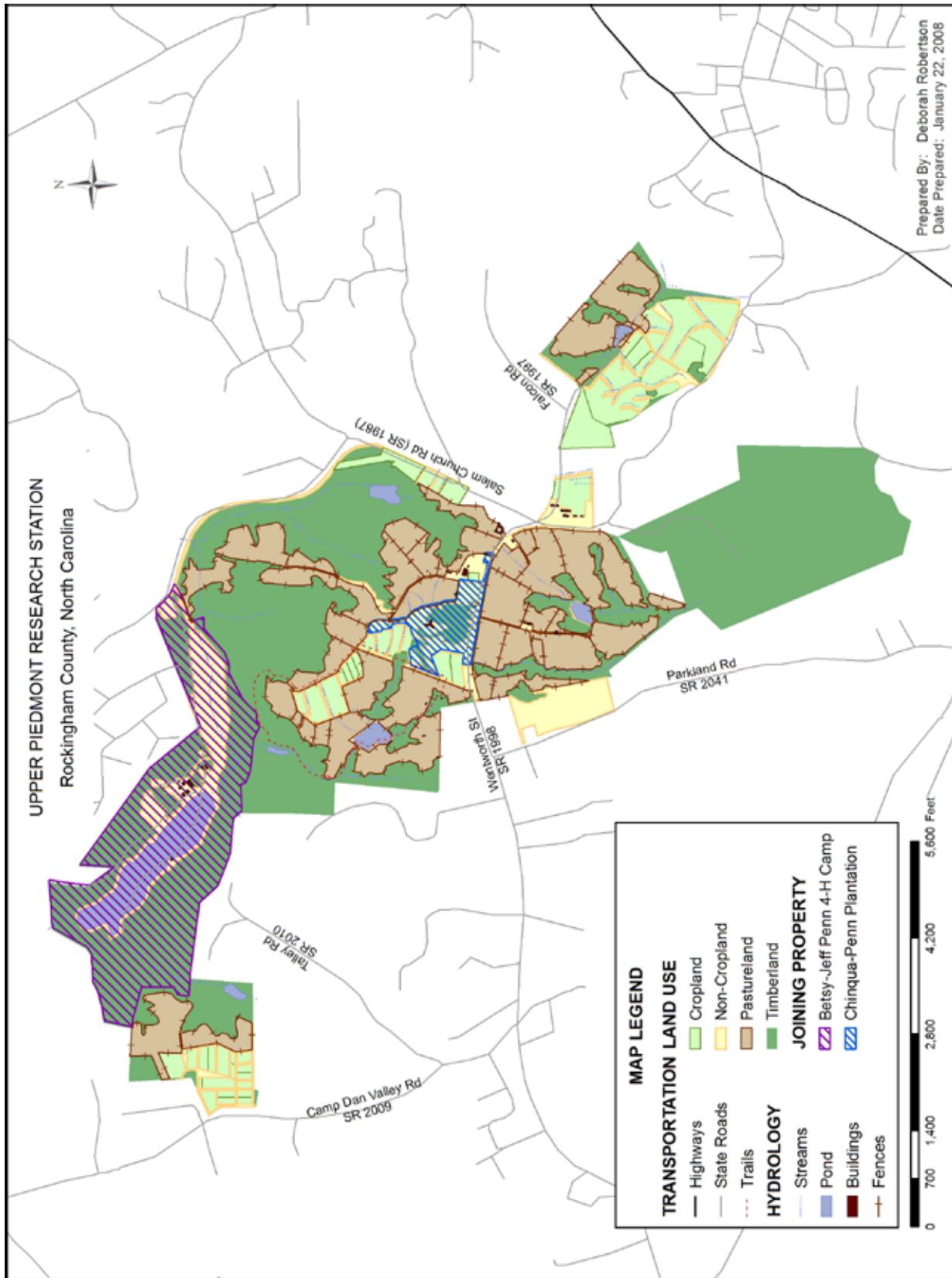
■ RESEARCH ■ FORESTRY ■ INFRASTRUCTURE

**Station Improvements:**

- 200 foot - 54 gate Calan barn
- Local Farmer's Market on-site
- 1.5 mile long walking trail
- 4 new 40X80 ft sheds for tobacco curing and hay storage
- 4 box barn curing unit structure for curing tobacco
- Underground irrigation lines to irrigate over 60 acres.

**Station Events:**

- Annual Research Stations cattle sale
- Tours - NC A&T State University staff and local school groups
- Farm Safety Day
- "Spring Fever Sale" & "Long Horn Show"
- Chinqua-Penn Stew Day and UPRS hayrides; Hospice Walk-A-Thon



**FOREST MANAGEMENT PROPERTIES (NCDA&CS)**

*Tracts not located at Research Stations*

<b>Locations:</b>	<b>Acres</b>
Dix Tract (Wake Co)	318
Fountain (Edgecombe Co)	382
McCain (Hoke Co)	1740
Morrison (Richmond Co)	465
Samarkand (Moore Co)	244
Umstead (Granville Co)	3690
<b>TOTAL</b>	<b>6839</b>
Total - Research Station*	3795
Total - A&T Farm*	210
<b>TOTAL ALL LOCATIONS</b>	<b>10,844</b>



The General Assembly established through G.S. 106-22 the purpose of the farmland allocated to NCDA&CS as follows: State-owned farmland, including timberland, allocated to the Department of Agriculture and Consumer Services for the State Farm Program, shall be managed by the Department for research, teaching, and demonstration in agriculture, forestry, and aquaculture. Research projects on the State farms shall be approved by the Department. The Department may sell surplus commodities produced on the farms.

**Unique Characteristics:**

- Dix Tract – Cooperatively used by NCSU for teaching specifically forestry and entomology; adjacent to Yates County Park – serves as a buffer and teaching lab
- McCain – Vital part of the US Fish & Wildlife Service effort to recover the Red-cockaded Woodpecker, a federally endangered species, in the southern US; provides buffer area to Fort Bragg
- Umstead – Site of one of the largest populations of Smooth Cone Flower, a federally endangered species, on the east coast; site of on-going water quality/runoff study by NC Division of Forest Resources

**Capital Improvement Funding**

• Cherry Research – Swine (2005)	\$ 378,000
• Cherry Research – Dairy (2005)	\$ 285,500
• Hort. Crops & Peanut Belt - Irrigation System (2008)	\$ 200,000
• Piedmont - Grain Storage (2008)	\$ 400,000
• Tidewater - Greenhouse Expansion (2008)	\$ 750,000
<b>TOTAL</b>	<b>\$ 2,013,500</b>

**Timber Receipts**

FY 04-05	Pine Straw (McCain Tract)	\$ 5,187
FY 05-06	Right of Way (Fountain Farm)	\$ 9,825
	Pine Straw (McCain Tract)	\$ 14,251
FY 06-07	Pine Straw (McCain Tract)	\$ 15,128
	Timber Sale (Umstead)	\$572,113
	Timber Sale (Caswell)	\$ 40,323
FY 07-08	Pine Straw (McCain Tract)	\$ 22,467
FY 08-09	Pine Straw (McCain Tract- 3/18/2009)	\$ 14,048
	Land Transaction (Caswell)	\$103,425
<b>TOTAL</b>		<b>\$796,791</b>