

Five -Year Assessment and Program Evaluation Report

School of Agriculture and Environmental Sciences

*Department of Natural Resources and
Environmental Design*

- BS Agricultural Science/Natural Resources*
- BS Agricultural Science/Earth and Environmental
Science*
- BS Landscape Architecture*
- MS Plant and Soil Science*

Assessment Period: 1999- 2003

Submitted by

Dr. G. B. Reddy, Chairman

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Annual Assessment and Program Evaluation Report

I. Brief Overview of Department and Programs

North Carolina A&T State University is an 1890 land-grant institution, which maintains its legacy of teaching, research, and extension and aspires to be a premier educational institution for engineering, technology, nursing, and business through an interdisciplinary approach. The Department of Natural Resources and Environmental Design (NRED) plays a significant role in the University's vision. The Department's strategic plan builds on our traditional strengths in providing training and need-based solutions to farmers and small agriculturally related businesses as well as providing a platform for training African-American students seeking careers in soil science, plant science, horticulture, environmental science, bioenvironmental engineering and landscape architecture. The Department's programs address the issues of plant resistance to insects or pathogens by biotechnology, soil and water quality, sustainable agriculture for limited resource farmers, mushroom production, vegetable production in abandoned tobacco greenhouses and floriculture.

The Department offers B.S. degrees in Agricultural Science with concentrations in Natural Resources: Soil Science, Plant Science and Environmental Horticulture; Earth and Environmental Science, Bioenvironmental Engineering, and Landscape Architecture. The Department also offers a M.S. degree in Plant and Soil Science. A coordinator appointed by the Department Chair with approval by the Dean of the School of Agriculture and Environmental Sciences (SAES) administers each degree program within the Department. The Bioenvironmental Engineering program (formerly Agricultural and Biosystems Engineering) is a jointly administered program between NRED and the Department of Civil, Architectural, Agricultural and Bioenvironmental Engineering within the College of Engineering. The Landscape Architecture and Bioenvironmental Engineering degree programs are nationally accredited programs; they are the only such programs among Historically Black Colleges and Universities (HBCUs). The approximate total numbers of undergraduate and graduate students in the Department for the 2003-2004 academic year were 96 and 16, respectively.

NRED is comprised of an ethnically diverse faculty representing a broad range of disciplines, professional interests, and experience. The faculty include both tenured and tenure track faculty, as well as adjunct faculty with an academic rank. The Department is committed to uncompromising excellence through its teaching and research activities engaged in by the faculty, staff and students. Many of our faculty members were involved in interdisciplinary and multi-institutional research with other universities and federal agencies. Nine tenured faculty, four adjunct faculty, two research associates, and four part-time teaching faculty support the research, education, and outreach activities of the Department.

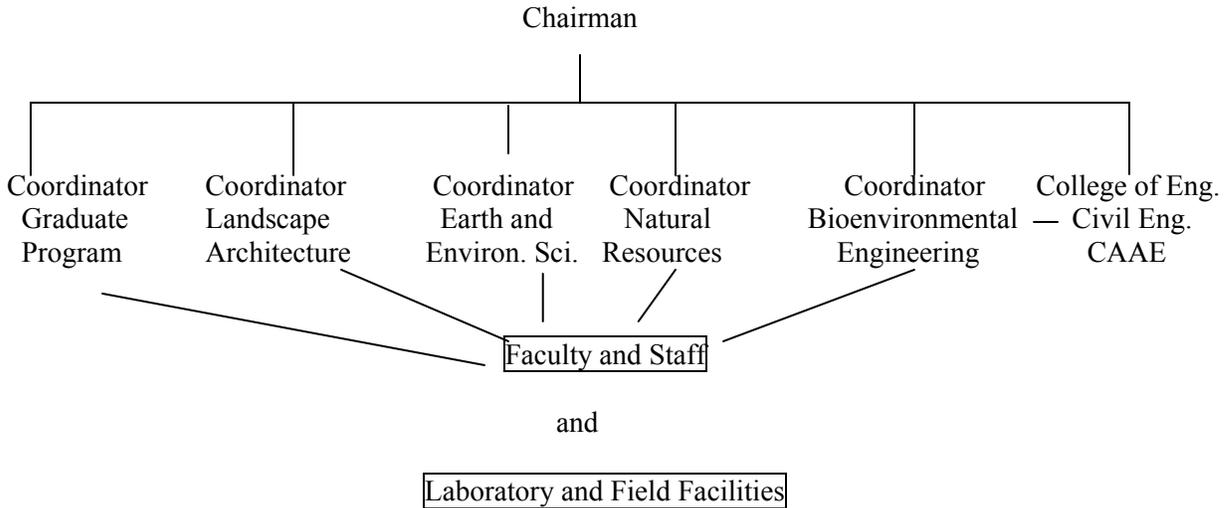
NRED is committed to creating an atmosphere for students and faculty to participate in interdisciplinary learning and research. For example, the Earth and Environmental Science program is designed to allow its students to take interdisciplinary

courses as electives to better prepare them for the job market. NRED practices a strong interdisciplinary focus which is reflected by the fact several courses offered by the Department attracts students from a variety of disciplines from across the campus.

Vigorous recruitment activities have been undertaken to recruit students into our programs and increase graduation rates. Academically, the majority of the students who are declared majors in the Department have performed well. One senior student in Landscape Architecture maintained an overall GPA of 4.0. Nineteen undergraduates were honor students. A senior project designed by four undergraduate students in Landscape Architecture won the 2003 Walt Disney Innovative Project Competition. One of our Horticulture students won the \$750 Joseph Shinoda Memorial Scholarship Foundation award. The Environmental Science Club has been chosen as one of 18 campus organizations to become the Strategies for Ecology, Education, Development and Sustainability (SEEDS) Campus Ecology Chapter. The Department has graduated 14 undergraduate students and 3 graduate students during the academic year of 2002-2003. The students graduating are seeking employment in Best Foods, Inc., USDA-NRCS, and the US Nuclear Regulatory Commission.

NRED fills an important complementary role to the other departments that make up SAES and the College of Engineering. Departmental research faculty routinely work with faculty and researchers from other disciplines (i.e., food science, animal science, civil engineering, and chemical engineering) to analyze problems and develop practical and effective solutions. In 2002-2003 NRED research faculty managed 22 (16 new and 6 continuous) on-going projects. The faculty was awarded \$1,142,103 this year and 1,149,091 in extramural funds from continuation projects as the PI or Co-PI. A total of 11 proposals are pending for funding. This past year the Department received two FUTURES grants, one relating to Biotechnology and Biodiversity and the other to Soil and Water Quality. Currently funded research also includes activities relating to mushroom technology, plant biotechnology, soil and water quality, animal waste management, wetlands treatment technology, and sustainable agriculture. Apart from scholastic work and research, the faculty is also engaged in outreach activities. For example, Dr. Isikhuemhen has conducted many workshops for farmers across North Carolina. Dr. Raczkowski conducted workshops on soil quality for field technicians and innovative farmers. Dr. Niedziela was involved in Specialty Crops training, the Golden Leaf project, and Risk Management training workshops. The faculty has collaborated with other faculty members or extension personnel within the School of Agriculture in other training activities.

Organizational Structure



Agricultural Science/Natural Resources: This program is centered on the study of soil science, plant science and horticulture science. There is a tremendous dearth of training for African-Americans in these areas where job opportunities are plentiful for these students. These sciences are the oldest of the traditional agricultural disciplines that maintain the status quo of agricultural production of this country. The faculty is highly qualified to educate and prepare for careers in these agricultural science areas.

Agricultural Science/Earth and Environmental Science: This program is designed for the students to receive first hand knowledge of interdisciplinary aspects of earth and environmental science to solve problems in environmental assessment, waste management, environmental remediation, water and air pollution. The courses offered through this program attract many students across the campus and generate high student credit hours (SCH).

Landscape Architecture: This program is concerned with the quality of land use which includes the analysis of environmental and social factors and recommendations for the preservation, design, construction, and maintenance of developed land areas. The scope of activities of projects varies from broad, regional landscape planning analysis to detailed site planning.

II. Strategic Plan

The Department of Natural Resources and Environmental Design's strategic plan builds on our traditional strengths in providing training and need-based solutions to farmers and small agriculturally related businesses as well as providing a platform to train African-American students who seek careers in soil science, plant science, horticulture, environmental science, bioenvironmental engineering and landscape architecture.

Vision: The Department of Natural Resources and Environmental Design will develop and define mechanisms to preserve and manage natural resources and sustainable environment through the learning, discovery, and engagement processes in biotechnology, waste management, soil and water quality, and landscape architecture.

Mission: The Department of Natural Resources and Environmental Design provides students and agricultural/environmental professionals with theoretical and experiential training necessary to identify, analyze and solve the agricultural, environmental and landscape architectural problems of today as well as new problems that may arise in the future.

Core Values: The NRED as part of the School of Agriculture follows the overall mission of a land-grant university, which includes teaching, research and education. These mission tasks are accomplished with scholastic activity, leadership, integrity, dignity, civility, diversity and global collaboration.

Students: For students in our degree programs provide the opportunities to earn minor concentration in other related interdisciplinary programs and to encourage students to qualify and receive the Waste Management Certificate and Biotechnology Certificate.

Curriculum: We have revised the undergraduate and graduate curriculum to meet the demands of today's employers as well as to reflect the interdisciplinary focus of the university. The Department has submitted a planning document for the B.S. degree in "Earth and Environmental Science" and a name change request for the graduate program from "Plant and Soil Science to "Plant, Soil and Environmental Sciences". These requests were submitted to reflect the planning for a Ph.D. in "Energy and Environmental Studies".

Evaluation: The Department and the School of Agriculture and Environmental Sciences are redesigning the faculty evaluation instrument, staff evaluation instrument, and program evaluation instrument. These instruments will be helpful in annual evaluations, promotion and tenure, post-tenure review, and rewarding of faculty.

Goals/Objectives

Outcomes Achieved/Results for Each Goal

The Department goals directly emerge from the Department's mission and vision. These goals are sub-divided into (1) academic student instruction and development; and accreditation, (2) enrollment, (3) graduation, (4) research activity, and (5) scholarly activities.

Goal 1: Academic student instruction and development; and accreditation. The purpose of this goal is to provide an instructional curriculum that will prepare the students for a competitive job market and/or advanced education to gain higher knowledge in their selective field. The program curriculums were designed to gain accreditation.

1. Outcomes Achieved

All the academic and programmatic activities are directed towards the course offerings, teacher instructional deliveries, curriculum enhancement and increasing enrollment, and graduation. The courses that students take provide them with theoretical and practical knowledge that will enable them to solve the problems in natural resources and the environment that are facing the United States and world. Students have utilized the resources of many organizations such as Environmental Club, Landscape Architecture Club, Gamma Sigma Delta, National Students Agronomy Club, Minorities in Agriculture, Natural Resources and Related Sciences and Collegiate (MANRRSC) to stay abreast with the professional activities. In addition, faculty and student interaction and membership in professional organizations are encouraged.

Number of Internships/Coop Positions

Six students (four landscape architecture and two horticulture students) completed internships or co-ops in 2002-2003 (Table 1.). A few landscape architecture companies (Mark Robinson's Associates, Sousa's Landscape Management), horticulture nurseries and Environmental Protection Agency (EPA) have provided the internships for our students majoring in landscape architecture, environmental horticulture, and environmental science.

Table 1. Student Internships and Coops (2002-2003)

Student	Company / Agency	Location	Duties
Richard Wagner	Mark Robinson's Assoc.	Raleigh, NC	Research
Jameka Kelly	Sousa's Landscape Mgmt	Bermuda	Design
Mike Feiock	Sousa's Landscape Mgmt	Bermuda	Design
Toney Mooney	Sousa's Landscape Mgmt	Bermuda	Design

Technologies Used for Instructional Delivery

The School of Agriculture and Environmental Science has established a "Smart Classroom" in room 255, Carver Hall that employs advanced computer instructional technology including "Smart Board" and "Smart Expression". Currently, a few NRED classes use this facility. Some of our faculty are preparing course content suitable for "Smart Classroom" teaching. This instructional technology is beneficial to teach students effectively with figures and photographs and tables with data. The Department plans to increase both the use of this classroom and other "Smart" technology. "Smart" technology includes interactive white boards' multimedia cabinets and software that facilitate meetings, teaching, and training. Both "Smart Board" and Smart Expression" are mobile and can be moved into other classrooms. This technology can work effectively with on-line distance learning courses.

A few courses were taught using “Power Point” technology. This technology helps students concentrate and learn more effectively. Also, we advise our students to use power point in presenting their project papers, project reports, thesis presentations and other assignments.

A few courses are under development to deliver the instruction on-line as “on-line” distance learning courses.

Student Activities (professional organizations, professional societies, student clubs, etc)

Students from the Department of Natural Resources and Environmental Design have engaged in the following activities during 2002-2003.

1. A&T Career Expo 2002 and 2003: Students from all undergraduate class years attended the Career Expo in March 2002 and 2003 to learn the interview process, employer’s expectations and develop their portfolios. More than 50 companies and state and federal agencies have participated with their exhibits.
2. Gamma Sigma Delta: This is an agricultural professional honor society that encourages the membership of undergraduate and graduate students, faculty and staff with an agricultural degree or career in agriculture. Two undergraduates, two graduate students and one faculty person were inducted into this society in 2002-2003 from our department. For the first time, the NC A&T Chapter of Gamma Sigma Delta has received funds to sponsor a Student Research Showcase of Excellence, and a NRED student won this award by presenting a research project on “Wetlands Usage for Wastewater Treatment”.
3. Professional Organizations: Two undergraduates and two graduate students attended the 13th ARD Research Symposium held in Atlanta. Three graduate students presented the papers at the Annual Agronomy Meetings in Denver, Colorado.
4. Landscape Architecture students meet every month as members of the Landscape Architecture club.
5. Environmental Science club members, representing students majoring in Earth and Environmental Science meet bi-monthly to work in environmental activities.

Students Honors/ Scholarships/ Fellowships

Table 2 shows that 29 of the 95 students majoring in a NRED program received awards, received awards, honors certificates and scholarships from Natural Resources, Earth and Environmental Science, and Landscape Architecture programs in 2002-03. Two students were honor graduates from Landscape Architecture, 11 students received honors certificates and 10 students received scholarships. One student from the department was recognized as Highest Academic Achievement Recognition for maintaining a 4.00 GPA.

Table 2. Awards/Scholarships/Fellowships/Honors

Item	Natural Resources	Earth and Env. Science	Landscape Architecture	Total
Honor Graduates			2	2
Honor Students	5	5	1	11
Scholarships Received	4	2	4	10
Waste Management	2	2		4
Gamma Sigma Delta (Honor Society of Agriculture)			2	2
Total	11	9	9	29

Student Placement

Three of our Landscape Architecture undergraduate students were placed in Landscape Architecture Companies (Tim Knowles Landscape Architecture, Inc, David Powell & Associates, and Mark Robinson & Associates) and one is planning to join a private firm. One Environmental Science student was placed with EPA, two graduate students have joined USDA-NRCS, and one graduate student is employed with the US Nuclear Regulatory Commission. One student majoring in Natural Resources has opted to go to the graduate school at NCA&T.

Table 3. Placement of Graduates

Name	Company / Graduate School
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Undergraduate Students:

Maud Kelly	David Powell & Associates
Orient Au-Vang	Mark Robinson & Associates
Patricia Scuderie	
Walter Royster	Tim Knowles Landscape Architecture, Inc.

Graduate Students:

Shava Lewers	EPA
Eugene Jones	USDA-NRCS
Vontice Federick	USDA-NRCS
Alicia Williamson	US-NRC
Lauren Glover	NCA&T Graduate School

Table 4. Placement of Graduates by Major

Major	Graduate School	Industry	Gov't/Public Sector	Unemployed
Natural Resources	1	0		0
Earth and Env. Science	0	0	4	0
Landscape Architecture	0	4	0	0

Student Evaluation of Courses

Summary of student evaluations for courses taught by the faculty in each program is shown in Table 5. Most of the courses taught received a ranking of 3.5 to 4.8 and falls into the 72 percentile of total courses taught in the department. The other 15 percent received a rating of 4.8 and higher. A few courses (12 percent) received less than 3.5 rating with regard to course and section and course regardless of the section in earth and environmental science program. This lower rating may be due to the large class enrollment in the course at the 200 level. The overall courses average rating for the department was 4.1, which is 0.2 less than the school and the university rating.

Table 5. Student Opinion of Faculty: Ranking of Courses

Semester	Item	Programs		
		Natural Resources	Earth & Env. Science	Landscape Engineering
		3.5 to 4.8 (% of courses)		
Fall 2002	Course and section	4.43	3.87	4.03
	Course, (regardless of section)	4.40	4.20	4.03
	Program Ranking	4.40	4.10	4.10
	Dept. Ranking	4.10	4.10	4.10
	School Ranking	4.30	4.30	4.30
	University Ranking	4.30	4.30	4.30
Spring 2002	Course and section	4.70	4.30	4.0
	Course, (regardless of section)	4.70	4.30	4.0
	Program Ranking	4.80	4.80	4.0
	Dept. Ranking	4.20	4.20	4.0
	School Ranking	4.30	4.30	4.3
	University Ranking	4.30	4.30	4.3
	Spring 2003	Course and section	4.5	4.2
Course, (regardless of section)	4.4	4.2	4.3	
Program Ranking	4.2	4.2	4.2	
Dept. Ranking	4.2	4.3	4.2	
School Ranking	4.3	4.3	4.3	
University Ranking	4.3	4.3	4.3	

Alumni and Employers' Feedback

The graduates from various programs in the Department are employed by the state and federal agencies or enrolled for M.S. and Ph.D. degrees at other universities. USDA-NRCS is one of the largest employers of our undergraduate and graduate students. We are developing a survey instrument for employer opinions of our graduates. Cynthia Dorrough, Anthony Harvey, Eric Phillips, Vontice Fedrick, Eugene Jones (2002 graduates) are employed with the USDA-NRCS. Alicia Williamson is employed with the U.S. Nuclear Regulatory Commission.

2. Assessment Measurements:

Undergraduate programs:

- 1) Faculty assignments; 2) laboratory exercises; 3) laboratory skills assessment; 4) senior project assessment; 5) awards, honors and scholarships; 6) case studies in courses; 7) student publishing records; 8) job placement; 9) exit surveys

Graduate program

- 1) Faculty assignments; 2) Comprehensive exams; 3) annual review of performance; 4) student presentations; 5) student publications; 6) awards, honors and scholarships

3. Assessment Procedures

Faculty assignment: Students (undergraduate and graduate) were assigned to specific faculty for curriculum and other professional advisement.

Laboratory exercises and laboratory skills assessment: Many courses in the department have a laboratory section and students complete the exercises in class. The results/calculations/and questions-answers sheets were submitted to the instructor for grading. During the laboratory period, the instructor observes each student to assess their laboratory skills and works with them to help them improve their laboratory skills.

Senior project assessment: The students in Landscape Architecture have to prepare and present a senior design to the faculty and their peers. Students majoring in Natural Resources, Environmental Horticulture, and Earth & Environmental Science will complete an internship project and present a report to their seminar class.

Case studies in courses: In courses that use case studies for instruction (such as Waste Management – EASC 622 and Environmental Problems – EASC 699) students select a case study for class presentation.

Students' participation in professional meeting and presentations: Students were encouraged to present papers in professional meetings for the work that they do with the research faculty and staff. It is generally expected that most students should have a few scientific abstracts by the time they graduate. It is a customary in the department for

graduate students to present papers in the professional meetings and write the first draft of a paper for publication purposes before they graduate from the program.

Comprehensive exams: The graduate students take comprehensive exams in the department to qualify for the degree. The comprehensive exam is compulsory for both thesis and non-thesis opted students.

Annual Review of Performance: The thesis committee reviewed the graduate students' records to evaluate their performance in courses, progress in research, and overall performance in the program.

Students Awards/Honors and Scholarships: The undergraduate and graduate students received research training scholarships and research assistantships, respectively. From three programs ten students received scholarships and eleven students received honors.

4. Administration of Assessment Procedures

The NRED Department curriculum committee reviewed all curricula. The undergraduate advisors advise on curricula and internships. The department chairperson and program coordinators administered the course offering assessment procedures. The faculty person helped in coordinating the instructional delivery systems such as black board and power point. The administrative assistant administered the student evaluation of courses. The graduate students' research presentations and travel were taken care of by their individual advisors with the approval of the chairperson. The program coordinators encouraged students to enroll in honors program.

5. Use of Assessment Findings to Improve Program

The use and results of the assessment procedures have contributed to improvement in various programs in the department. The following are a few improvements that have resulted from results of our assessments:

- 1). Curriculum changes were made to improve the programs in the Natural Resources program.
- 2). Faculty who received poor evaluations in teaching have been received mentoring to improve their teaching.
- 3). Mandatory summer internship or practical training of one semester for all majors in the department is being implemented.
- 4). A graduate degree title change from Plant and Soil Science to Plant, Soil and Environmental Sciences has been requested.
- 5). The scholarships selection committee has awarded Ford and USDA-NRCS scholarships to the deserving undergraduate students.
- 6). Student suggestions are routinely solicited for ways the Department might improve its programs and curricula.

Accreditation

The Landscape Architecture program successfully completed the accreditation review by the National Landscape Association Accreditation Board in 2001. The accreditation review recommendations are enclosed in the Appendix.

Goal 2: To increase enrollment by 5% in Natural Resources, Earth & Environmental Science, and Landscape Architecture programs and 10% in the Plant and Soil Science graduate program.

1. Outcomes Achieved

Enrollment in Natural Resources, Earth and Environmental Sciences and Landscape Architecture did not meet projected increases.

2. Assessment Measures

Number of students enrolled by majors

Table 6. 2002-2003 NRED Enrollment

Major or Concentration	Undergraduate		Graduate		Total	
	Male	Female	Male	Female	Male	Female
Agricultural Science/ Natural Resources	11	18			11	18
Agricultural Science/ Earth and Environmental Science	13	11			13	11
Landscape Architecture	44	12			44	12
Plant and Soil Science			11	5	11	5

3. Assessment Procedures

To accomplish the targeted increase in the enrollment, the department established a recruitment committee and strategies were developed. The committee considered several recruitment methods and tools: departmental flyers, mailing letters to the school counselors, school visitations, alumni contacts, and other public (e.g. state fair exhibits about our programs). We have not increased the enrollment by 5% in all undergraduate programs. We will track enrollment by majors.

4. Administration Assessment Procedures

The department recruitment committee and department chairperson administered the assessment.

5. Use of Assessment Findings to Improve Program

In order to meet enrollment goals the department decided to enhance recruitment. The brochures and flyers were changed based on the budget limits. The visitation of high schools by various faculty members occurred to recruit students into the programs. High school summer intern students were trained in the department. Also, NASA summer high school students were trained under interested faculty research projects.

Goal 3. To ensure that students graduate on time in their respective degree/concentration programs.

1. Outcomes Achieved

Table 7. Number of Undergraduate Students Graduated (1999-03)

Graduation Rates after 4-yrs			
Year of Entry	Department	School of Agriculture	University
1999	16	67	
2000	19	78	
2001	14	49	
2002	15	54	
2003	12	75	
5-yr average	13	59	

The graduation rates (<10) in Landscape Architecture did not meet the requirement of General Administration of UNC system.

2. Assessment Measures

The number of students graduating.

3. Assessment Procedures

The undergraduate students were advised and monitored by their advisors for course registration in each semester and ensure that they had enough credit hours and required courses to graduate in their major concentrations. In the first semester, each graduate student's plan of graduate study was prepared, including course work and research. Undergraduate and graduate student courses and mid-term performance were monitored to identify the students who were falling behind for graduation. Students who needed tutorial services were sent to the Tutorial Center for assistance. Tracking the number of undergraduate students graduating.

4. Administration of Assessment Procedures

The incoming freshman students were assigned to a freshman coordinator for monitoring their success. The faculty advisors closely monitored their advisees through their sophomore to senior year and counseled them to complete their degree successfully. A faculty person was designated for every ten undergraduate students to advise them in their course schedule and other professional club or society activities. The coordinators of each department program monitored and supervised all the advisement of students in their program.

Graduate students selected their advisor in the first semester of the graduate work based on their research interest or area of interest. The graduate student advisor advised the student on courses and research. The graduate program coordinator monitored all the graduate students' performance in each semester. This individual also conducted meetings with graduate students for feedback and helped them with issues relating to assistantships, travel to the professional meetings, and research.

5. Use of Assessment Findings to Improve Program

It was found that monitoring freshman students was difficult for the reason that they typically in their first year do not take any course in the department. Also, it was determined that the students graduating in more than four years were working a part-time or even full time job. As a result, at times the graduate students had problems with their research and could not graduate in two years. In general, the pitfall of our programs is not having enough students enrolled in the programs. Therefore, enrollment had been our first priority and developing the strategies for recruitment.

Landscape Architecture accreditation was successfully completed with high compliments on the program standards and quality. However, the review committee recognized the low enrollment numbers in the program. The coordinator of this program has contacted other institutions having such accredited programs and tried to receive a few applications from those institutions. Also, the faculty and alumni have started aggressively recruiting students into the program. A web page design is underway to help the recruitment process.

Goal 4. To increase the faculty extramural research funding through grantsmanship.

1. Outcomes Achieved

The Department was following the research guidelines under the Research Program Initiatives in the School of Agriculture and Environmental Sciences. The research focus in the department was in the areas of biotechnology and biodiversity, soil and water quality, sustainable agriculture, small farming systems, waste management and

value added products, and fermentation technology. Several of our faculty were involved in quality research and continuously strive to obtain extramural research funds. The department faculty were engaged in several on-going and newly funded projects that amount to a total of \$2,291,297 (\$1,142,103 from new projects and \$1,149,194 from continuation projects). The faculty prepared twenty-seven proposals for funding, and sixteen proposals were funded amount to \$1,142,103.

2. Assessments Measures:

Number of proposals prepared and funded, and 2) total funded dollar amount.

3. Assessment Procedures

- 1) Written proposals submitted to the department chairperson for review
- 2) Received grant notification from the contract and grants division and funding agency
- 3) The amount of research funds was monitored on a monthly basis.
- 4) The faculty attended funding agencies workshop to enhance grant writings.

4. Administration of Assessment Procedures

- 1) The departmental chair monitored the progress of research
- 2) Timely submission of the reports were monitored
- 3) Budget spending was periodically monitored

5. Use of Assessment Findings to Improve Program

Research faculty attended workshops annually organized by the Office of Budget, Contracts and Grants, Division of Research, and Agricultural Research to update the procedures. The research faculty also attended workshops on and off campus presented by the funding agencies. These workshops helped the faculty to increase their capacity in submitting more proposals and acquiring more research funds. They also became more knowledgeable in project development and project implementation including agency guidelines and reporting requirements. The department 's Chair encouraged the faculty to write interdisciplinary research proposals, having research, extension and education/training components. Also, the Chair ensured that all the proposals were in conjunction with one of the research initiatives illustrated in the School of Agriculture and Environmental Sciences (SAES).

Goal 5. To train and develop research skills of undergraduate and graduate students

1. Outcomes Achieved

Students having research interest and academic qualifications were encouraged to be involved in the research activities. Because of this, four students participated in the 13th ARD Research Symposium, Atlanta, GA. In 2003 three graduate students

participated in the 2002-American Society of Agronomy Annual Meetings held in Indiana. One Landscape Architecture student presented a NYC 2012 Olympic Village design.

2. Assessment Measures

- 1) Number of students trained

3. Assessment Procedures

- 1) Students were selected based on GPA and research interests
- 2) Faculty included students in their proposals

4. Administration Assessment Procedures

- 1) Faculty invited the students' participation
- 2) Faculty provided the students' assistantship
- 3) Advisors monitored student's research progress and laboratory research skills
- 4) Papers presented at conferences

5. Use of Assessment Findings To Improve Program

Undergraduate and graduate students worked very closely with their advisors in research planning and implementation. The field and laboratory technicians mentored the students in improving laboratory analytical skills. Students were trained to practice the research presentation before presenting at the professional conferences.

Goal 6. To enhance the scholarly activities of faculty in the department by the presentation of their papers in professional meetings, interaction with their peers, and publication of papers in refereed journals.

The Department of Natural Resources and Environmental Design has many faculty members engaged in research. The research is an integral part of teaching and outreach activities. The faculty (soil science, plant science, horticulture science, environmental science, water resource engineering and fermentation) engaged in writing proposals, receiving Evans-Allen and extramural funding, training graduate students, publishing papers and presenting papers in regional, national, and international conferences. The research outcomes have an impact on the state and national agriculture and environment. The overall research objective of the department has been to seek the new knowledge in their area of discipline and enhance the professional development of faculty through research.

1. Outcomes Achieved

The faculty members in the department have published five refereed papers, three papers are in review, six proceedings papers, and three non-refereed papers. The faculty have presented 25 papers in various professional meetings such as the 13th ARD Research Symposium, American Horticulture Society, Southern Agriculture Branch of the American Society of Agronomy, American Society of Agronomy, Bioenvironmental International Conference, International Congress of Soil Science, National Solar Energy Conference, NC A&T Science & Technology Frontiers Research Symposium, and National Conference on Environmental Science and Technology.

Faculty members have attended many workshops related to their research or education. The faculty represented in proposal review panels for federal agencies and review scientists for journals. Several of our faculty members were engaged in conducting interdisciplinary and multi-departmental or institutional research.

2. Assessment Measures

1) Number of publications in refereed and non-refereed journals, 2) number of conference proceedings papers, and 3) number of presentations in conferences.

3. Assessment Procedures

Faculty submitted reports on publications and presentations annually for yearly departmental summary of activities, as requested by department chair.

4. Administrative Assessment Procedures

The department chair compiles faculty reports on publications and presentations.

5. Use of Assessment Findings to Improve Program

The faculty involved in research attended the writing workshops either conducted by the NC A&T Research Administration office or federal agencies. Faculty attended the workshops to develop Power Point skills on computer.

III. Relationship between Program/Department's Strategic Plan and the School

The mission of the School of Agriculture and Environmental Sciences (SAES) is to provide opportunities for individuals from diverse backgrounds to achieve excellence, through intellectual and technological advancements in the food, agricultural, environmental and life sciences that will cultivate and enhance their potential for global leadership, productivity and competitiveness. The SAES focuses ostensibly on research initiatives that will allow faculty, staff and students to make significant contributions in strategic areas where the potential for learning, discovery, and engagement is the greatest.

North Carolina A&T State University has initiated FUTURES to create a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement, and operational excellence. FUTURES themes include 1) Distinctive, Visionary Interdisciplinary Programs and Centers, 2) Strategic Partnerships, 3) Globalization, 4) Enhanced and Diversified Resources, and 5) Responsive Learning Environment.

The departmental strategic goals and the School goals reflect the goals of FUTURES. For example: Develop a Strategic Plan (Futures Goal II); Create a Responsive Learning Environment (Futures Goal III); Integrate Teaching, Research and Extension Programs (Futures II); and Increase Enrollment, Retention and Graduation Rates (Futures Goal IV).

The department’s mission, vision and core values complement those of the School and FUTURES.

Vision: The School of Agriculture and Environmental Sciences will help foster the development of North Carolina A&T State University into a leading comprehensive university through development and expansion of premiere teaching, research and extension programs in food, agriculture and environmental sciences.

Core Values: Teaching, Research, Extension, Excellence, Scholarships, Leadership, Integrity, Dignity, Civility, Diversity and Globalization.

The goals of the Department of Natural Resources and Environmental Design as outlined in the previous section are essentially the goals of the School of Agriculture and Environmental Sciences.

A. Student Profile

1. Admission Requirements

The admission requirements of our departmental programs in Agricultural Science, Natural Resources; Agricultural Science, Earth and Environmental Science follow the policies of university admission. The following table presents the admission scores of our undergraduate students over the last three years.

Table 8. Undergraduate Student Admission Scores Average for the Department

2000			2001			2002		
High School GPA	AVG SAT	Headcount	High School GPA	AVG SAT	Headcount	High School GPA	AVG SAT	Headcount
2.69	925.81	65	2.77	927.71	50	2.79	922.22	70

Admission requirements for Landscape Architecture students differ slightly from other programs of our department. In addition to the applicant satisfying the standing university admission policy, entering freshman must have a SAT of 940 and high school GPA 2.5 (4.0 scale).

Graduate students must meet the minimum requirements of graduate school. The department has a requirement of GPA 2.8. If the applicant was found to be weaker in math or chemistry, the committee recommended conditional admission, and upon successful completion of these courses, the conditional admission was changed to the regular admission status. Non-agriculture science applicants were required to complete 6 credit hours of soil and plant sciences. Applicants who are non-science majors must take one year of pre-requisite courses in sciences (Biology 6 hours; Chemistry 10 hours; Physics 3 hours; Soil Science 3 hours; Plant Science 3 hours).

2. Total Enrollment in Department and Programs

Table 9. Enrollment in Department and Programs (2002-2003)

Major or Concentration	Undergraduate	Graduate
Natural Resources	29	
Earth and Environmental Science	24	
Landscape Architecture	56	
Plant and Soil Science		18

3. Number of Majors in Honor Program

Table 10. Number of Majors in Honor Program

Item	Natural Resources	Earth and Env. Science	Landscape Architecture	Total
Honor Graduates			2	2
Honor Students	5	5	1	11
Scholarships Received	4	2	4	10
Waste Management	2	2		4
Gamma Sigma Delta (Honor Society of Agriculture)			2	2
Total	11	9	9	29

4. Number of Transfers

Our programs in Natural Resources and Earth and Environmental Science consider transfer students with a GPA of 2.4 and above with a minimum C grades in math and sciences. The Landscape Architecture program accepts the applicants with less than 2.5 GPA if they have graduated from an accredited college or university.

Table 11. Number of Transfers Student and Credit Averages (2000-03)

2000		2001		2002	
Enrollment	Credits	Enrollment	Credits	Enrollment	Credits
7	413	8	415	9	551

5. Progression Requirement

Undergraduate Programs

There is no requirement of monitoring the progress of students. However, the undergraduate student advisors monitor the progress of the students each semester by checking their mid-term and final grades, scholarships, work-study programs, and internships.

The Graduate Program

The graduate students working towards their Master's degree in Plant and Soil Science must submit a plan of work during the first semester of study. The graduate plan of work includes the advisor and committee members, courses need to be completed, and research plan. The graduate students receive the graduate handbook for guidelines, policies and regulations. The committee members for final agreement and approval must sign the graduate plan of work. The approved document then becomes the student's official guide to complete his/her degree. The committee and Dean of the Graduate School must approve any changes in the plan. The graduate students must complete their degree in six successive calendar years. If the students take a semester break in their studies, they must apply for readmission. Each graduate student must complete 6 credit hours of core courses.

Thesis Students

Students must successfully complete 24 credit hours of course work and six hours of thesis. The thesis prepared by the student must present original investigation into a subject, which has been approved by the thesis committee and the graduate program coordinator. After research was completed and thesis written, the candidate must successfully defend his/her thesis. Four signed copies of the thesis must be submitted to the Graduate School by a specific deadline in the academic semester or summer session. The thesis is available in the Office of Graduate Studies for examination.

Non-Thesis Students

Non-thesis opted students must complete 33 credit hours of course work and submission of a project report. The students enroll into a special problem course and conduct mini research project for the project report. The written report was then submitted to the committee for approval.

Comprehensive Examination

All students (thesis and non-thesis) enrolled into the graduate program in Plant and Soil Science have taken a written comprehensive examination. The Office of Graduate Studies announced the comprehensive examination dates for each semester, and the committee administered the examination papers to their respective candidates. A unanimous vote of approval of the committee was required for passing the written comprehensive examination. If the candidate happens to fail the exam, he/she was allowed to retake the examination. Upon failure of the examination a second time, the candidate was either asked to take additional courses to build the background or terminate the graduate work at NCA&T. The comprehensive examination was only allowed when students complete all their course work and in the final stages of their research.

6. Enrollment in Degree Credit Distance Learning

There was no enrollment in the distance learning courses in the programs offered in NRED. However, a few courses are being developed in the area of horticulture for future distance learning enrollment.

General Education

1. Freshman Performance Data

Table 12. Freshman Performance Data by Program (3-yr average)

2000-2001	
Program Area	Cumulative GPA
Plant and Soil Science	3.85
Earth & Environmental Science	3.43
Landscape Architecture	4.02
Horticulture and Design	3.25

2001-2002	
Program Area	Cumulative GPA
Plant and Soil	2.54
Earth & Environmental Science	3.44
Landscape Architecture	4.21
Horticulture and Design	2.92

2002-2003	
Program Area	Cumulative GPA
Plant and Soil Science	3.21
Earth & Environmental Science	3.44
Landscape Architecture	4.22
Horticulture and Design	3.92

2. Other Measures or Indicators

Table 13. Major GPA and Overall GPA of Graduated Students (2000-2003)

2001-2002		
Program Area	Major GPA	Cumulative GPA
Earth & Environmental Science	3.58	3.44
Landscape Architecture	3.00	2.80

B. Academic Major/Program

1. Results of Most Licensure Examinations

Over the last five years, Landscape Architecture majors taking the North Carolina State Licensure Examination have passed the exam during that period. Only 10% of our Earth and Environmental Science and Natural Resources students have applied for the NC State Professional Soil Certification exam. However, 40% of our graduate students have passed the NC State Professional Soil Certification.

2. Accreditation Reviews

Only Landscape Architecture is an accredited program in the Department of Natural Resources and Environmental Design. This program received accreditation in 2001 from the Landscape Architecture Accreditation Board, under the auspices of the American Society of Landscape Architects.

3. Internal Program Reviews

Our departmental programs were not internally reviewed. However, our faculty were evaluated by using a standard form developed by the School of Agriculture. Faculty are evaluated by the students in each course they teach each semester by using a standardized form developed by the university, and faculty evaluation was performed by their peers by using a form developed in the department. Also, student exit interviews provide feedback for our programs. The department is planning to undergo a self-assessment study in the coming year.

4. Retention and Graduation Numbers

Table 14. Retention and Graduation Numbers (1997-2002)

Year of entry	Retention Numbers after 4 yrs			Graduation Numbers after 4-yrs		
	Department	School of Agriculture	University	Department	School of Agriculture	University
1999	8	96	1,530	16	67	1,228
2000	8	72	1,661	19	78	1,119
2001	8	74	1,760	14	49	1,210
2002	7	82	1,810	15	54	1,582
2003	8	92	1,902	12	75	1,976
5-yr average	8	65	1,444	13	59	1,186

5. Graduates (Alumni Survey)

The graduates from various programs in the department were employed by state and federal agencies or enrolled for M.S. or Ph.D. degrees at other prestigious universities. USDA-NRCS is the largest employer of our graduates and has expressed a satisfactory job performance by our graduates (personal communication). However, a survey instrument needs to be developed for completion by employers for documentation.

6. Continuing Education and Employment

Table 15. Placement of Graduates by Major

Major	Graduate School	Industry	Public Sector	Unemployed
Natural Resources	1	0	1	0
Earth and Env. Science	0	0	2	0
Landscape Architecture	0	4	0	0

7. Results of Employer Surveys

The employer survey instrument needs to be developed.

8. Evaluation of Student Experiences

1) Personal communication with graduating students

70% of the graduated students expressed that the academic programs offered in the department were in the range of good to excellent. They also expressed that they had more interaction with faculty and staff.

IV. Faculty Development and Quality

A. Faculty Personnel Policies Regarding Appointment, Promotion, Tenure and Merit Salary Increases on Basis of:

Personnel Policies:

Appointments: The department follows the guidelines and hiring policies of the university for the appointment of either tenure track or adjunct faculty. When a new position was advertised, a search committee was formed comprising three senior faculty, one adjunct faculty, and a faculty person from another department that was closely related to the field.

Promotion and Tenure: The department strictly adheres to the policies of the university regarding the promotion and tenure of the faculty in the department. When a faculty person joined the department, a senior faculty person was appointed as a mentor/advisor to him/her guiding that person for promotion and tenure. Faculty persons requesting consideration for promotion or tenure or both must have his/her application package with proper supporting documentation reviewed by the promotion and tenure committee and chairperson of the department. Due consideration was given by reviewing the portfolio containing teaching, research, and public service activities. The promotion and tenure committee made the recommendation to the chairperson and based on the committee's

recommendations and his/her own judgment, the chairperson made a recommendation to the Dean, School of Agriculture and Environmental Sciences. The same procedure was applicable to the adjunct faculty; however, their package was not forwarded to the university's promotion and tenure committee. The promotion and tenure committee in the School of Agriculture and Environmental Sciences reviewed the documentation portfolios and make their recommendations to the Dean. The Dean who forwarded the application-portfolio to the university promotion and tenure committee with his/her recommendations made the final decision. The rejected applications were not forwarded to the university promotion and tenure committee and stayed with the Office of the Dean, School of Agriculture and Environmental Sciences. During the last five years, one faculty person was promoted to a Full Professor and one tenure track faculty person was tenured and promoted from Assistant Professor to an Associate Professor. In addition, two Adjunct Assistant Professors have been promoted to Adjunct Associate Professors.

Merit Salary Increases: The chairperson evaluates faculty members of the department by following the procedures approved by the School of Agriculture and Environmental Sciences. Since the 2000-01 academic year, a performance work plan or performance expectation plan (provided in Appendix) instrument was developed. This instrument was used to develop a plan of work by the faculty and got an approval by the chairperson in the beginning of the academic year. At the end of academic year, the performance work plan and the portfolio reflecting the work plan were reviewed, and faculty was evaluated. Also, the School of Agriculture has developed a faculty evaluation form (provided in Appendix) for the usage of annual faculty evaluation. During the last week in April or first week in May, the chairperson schedules an evaluation conference with each faculty member. Following the evaluation of faculty, a decision on merit pay was made by the chairperson and forwarded to the Dean, School of Agriculture and Environmental Sciences. The department has several tenured senior professors, and their pay scale was not comparable with that of other tenured professors in other schools/colleges within NCA&T or other land grant universities across the nation. The faculty morale has gone down in the department for not having any salary raises for the past four years. The adjunct faculty members who were highly qualified and produced quality work had concerns about their future opportunities for tenure track positions.

1. (Learning) Teaching Evaluation of Instructors and Instruction

Dual evaluation techniques were employed by the department to evaluate the faculty: a) student evaluations and b) peer evaluations. (Peer Evaluation form in Appendix) For the past several years, the students evaluated faculty teaching through the use of the evaluation instrument developed in the university. Our faculty received a score ranging from 3.9 to 4.9 on a 5.0 scale, which means the average department score was higher than the university average. At times one or two faculty received an evaluation score lower than 3.5, and in such cases, the potential problems were discussed with the respective faculty member, and corrective measures were taken. Fortunately, we have some faculty members who have received excellent teaching awards. For example Dr. Marihelen Kamp-Glass received the "Excellence in Teaching Award" for the School of Agriculture and Environmental Sciences in 1994 and 2003. Also, the peers in

instructional methods, subject matter, course outline, and instructional delivery evaluated the faculty. The chairperson reviewed each faculty person based on student evaluations, peer evaluations, performance plans, and portfolios and make recommendations to the Dean's office.

Table. 16 Student Evaluation Score

Semester	Item	Average Scores (1 low to 5 high)		
		Natural Resources	Earth & Env. Science	Landscape Architecture
Lowest to Highest Scores				
Fall 2002	All Courses and section	4.43	3.87	4.03
	All Course, (regardless of section)	4.40	4.20	4.03
	Program Ranking	4.40	4.10	4.10
	Dept. Ranking	4.10	4.10	4.10
	School Ranking	4.30	4.30	4.30
	University Ranking	4.30	4.30	4.30
Spring 2002	All Courses and section	4.70	4.30	4.0
	All Course, (regardless of section)	4.70	4.30	4.0
	Program Ranking	4.80	4.80	4.0
	Dept. Ranking	4.20	4.20	4.0
	School Ranking	4.30	4.30	4.3
	University Ranking	4.30	4.30	4.3
Spring 2003	All Courses and section	4.5	4.2	4.3
	All Courses, (regardless of section)	4.4	4.2	4.3
	Program Ranking	4.2	4.2	4.2
	Dept. Ranking	4.2	4.3	4.2
	School Ranking	4.3	4.3	4.3
	University Ranking	4.3	4.3	4.3

2. Discovery-Research and Scholarly Productivity and Creative Activities

Over the past fifteen years, department faculty have been actively involved in research and creative activities and have generated millions of dollars, presented several papers, and published papers in refereed and non-refereed journals. The department strives to provide an infrastructure to facilitate the research conducted in laboratories and in the field. The department has concentrated its research endeavors in areas such as soil and water quality, plant biotechnology, waste management, and sustainable agriculture. The Center for Soil and Water Quality has many on-going research projects that tackle

the problems that exist in North Carolina and in the country. For example, millions of tons of soil are eroded in the world each year and causes surface water pollution. The research projects are dealing with the techniques to prevent or reduce such erosion and chemical contamination. The swine waste research conducted on the farm using constructed wetlands under the leadership of Dr. G. B. Reddy has received national recognition in solving the swine waste treatment and disposal problems facing North Carolina. Growing vegetables in North Carolina by using sustainable methods is challenging but helping small farmers to provide additional income to the family. Also, the department is promoting biotechnology research to propagate quickly the medicinal value products to promote the entrepreneurship among innovative farmers. The department is known in North Carolina for mushroom production technology and Dr. Isikhuemo is training several farmers in this area across the State. The animal, food, and fermentation waste are recycled and developed into value added products for markets. Over the last five years our faculty received more than \$9 Million as principal investigators or as co-principal investigators. The faculty have collaborated with many other faculty persons for interdisciplinary research within the School of Agriculture and Environmental Sciences or across the campus and with the scientists from federal agencies (USDA-ARS, USDA-NRCS, USDA-CSREES, EPA, DOE, and USDA-Forestry).

Two of the Landscape Architecture faculty have earned their terminal professional degrees from Harvard University and brought a greater prestige to this accredited program. Instructional and creative activities are drawn from art, science and technology and focuses on analysis and synthesis, leading to graphic solutions of physical design problems in the landscape. The landscape faculty were involved with forestry professionals to design a recreational facility in the Appalachian Mountains.

Research Awards

During the academic year of 2002-03, the faculty in the department were very active in writing 27 proposals and successfully obtaining 16 proposals a total funding of \$1,142,103. Also, six research projects funded by Evans-Allen Research Program, Formula-Funded Research from USDA (Public Law 95-113, Section 1445) amounted to \$650,000. In addition to the above projects and funds, a few continuation projects are closing this year in the amount of \$1,149,091 (see Table 17 and 18).

Table 17. Awards

Year	Proposals			Amounts		
	Teaching	Research	Creative	Teaching	Research	Creative
1998-99	1	7	1	10,067	322,593	20,000
1999-00	7	7	1	957,00	2,624,000	20,000
2000-01	5	6	-	690,000	1,195,000	-
2001-02	3	9	-	1,722,552	203,000	-
2002-03	-	16	-	-	1,142,203	-

Table. 18 Research Grants and Awards (1997-2203)

Year	Number of Funded Proposal	Amounts
1997-98	17	\$2,616,493
1998-99	17	1,658,676
1999-00	23	2,050,418
2000-01	19	449,475
2002-03	16	2,291,194
TOTAL	104	\$9,580,173

3. Engagement – Service Activities

Faculty Development Activities

During 2002-03, the faculty attended many workshops related to their research and education for professional development and growth. (See Table 23). Dr. Guochen Yang participated in SBIR, New Gene Discovery, and Bioinformatics workshops; Dr. Carl Neidziela participated in Risk Management, Specialty Crops, and Future Agricultural Summit Workshops; Dr. Charles Raczkowski conducted field workshops for NRCS and extension staff in soil quality. DR. G. B. Reddy served as a Review Panelist for SARE proposals and reviewed articles for journals. Dr. Godfrey Gayle is active in the National Irrigation Association and NC Geology Advisory Board. Dr. Manuel Reyes served as a Technical Review Panel Member for the Water Resources Research Institute and designed a Web Site for SWQIT. Dr. Ghasem Shahbazi is a Board member of NC Energy.

Table 19. Faculty Development Activities

Faculty	Short Courses	Professional Meetings	Workshops and Conferences	Papers and Posters Presented	Other
M. Glass	0	4	3	1	2
O. Isikhuemhen	0	4	4	2	2
C. Niedziela	0	2	3	5	1
C. Raczkowski	0	1	2	3	7
G. Reddy	0	4	2	4	2
M. Reddy	0	1	1	1	0
G. Yang	0	3	3	6	0
Total	0	15	18	22	14

B. Faculty Profile- Distributed by:

1. Highest Degree Earned

All faculty persons involved in the Natural Resources Program and Earth and Environmental Science Program have a Ph.D. degree. However, in Landscape Architecture the Masters degree in Landscape Architecture (MLA) is considered a terminal degree. Three faculty members of this program have MLA degree.

2. Rank and Tenure

Table 20. Tenure Density by Rank, Gender, and Program Area

Program Area	Rank			Gender		Ethnic Background		
	Assistant Professor	Associate Professor	Professor	Male	Female	Black	White	Other
Natural Resources & Earth and Env Science	0	0	4	3	1	1	1	2
Landscape Architecture	1	1	1	2	1	1	2	0
TOTAL	1	1	5	5	2	2	3	2

3. Age Range

Approximately 60% of the faculty is above 55 years old and the rest are in the 40's range.

4. Gender

Of six tenured faculty, two faculty members are female, and the rest are male. However, the faculty lacks an Africa American female, but one could be considered in future hiring.

5. Race

Among the total faculty persons, two faculty members are white, one is African American, two are of Asian origin, and one is of African origin.

Table 21. Faculty Density by Rank, Program Area and Social Traits

Program Area	Rank			Gender		Ethnic Background		
	Assistant Professor	Associate Professor	Professor	Male	Female	Black	White	Other
Natural Resources & Earth and Env Science	2	2	4	7	1	2	3	3
Landscape Architecture	1	1	1	2	1	1	2	0
TOTAL	3	3	5	9	2	3	5	3

The two assistant professors and two associate professors listed in the above table are at the adjunct faculty status (non-tenure track) and four full professors are tenured.

V. Progress Toward University’s Mission

A. Access

1. Enrollment Patterns and Trends

The total annual enrollment for the undergraduate and graduate programs is shown in Table 22. The data reveals that undergraduate and graduate enrollment ranged from 50 to 112 and 5 to 14, respectively. Given the three undergraduate programs in the department, the enrollment was low and need to be improved. The recruitment efforts have been in place by appointing a recruitment strategy committee to attract more students into the programs. The department participated in the university recruitment program. Our faculty members (based on their schedule) have accompanied the university on recruitment trips and School of Agriculture recruitment trips. Also, our department has started to visit the high schools in the state for recruitment purposes. Every year, the department participated in the University’s Career Day and School of Agriculture’s Career Expo. We also participated in the annual Small Farm Week and Agriculture Day Picnic conducted by the School of Agriculture and Environmental Sciences. The department has developed a leaflet for student recruitment. Presently, we are working with the communication division of School of Agriculture and Environmental Sciences to develop a Web Page and CD-Rom.

Additionally, the department works very closely with the School’s recruitment committee, alumni, and representatives of industry and government to help recruit the best and promising students into our programs. The USDA Scholarship program has helped us to recruit one or two quality students a year, and it provided the list of students with their interest, GPA and SAT scores. We had contacted these students directly, but generally we failed to recruit such students due to the lack of scholarship money.

Graduate student recruitment was also a major hurdle in our department. The major impediment to graduate student recruitment was the lack of scholarships or assistantships. Because of the high out-of-state tuition, students generally cannot sustain

themselves in the program with only a \$12,000/year assistantship from the department. Also, the university has no provision for tuition fee waiver for graduate students. Due to these constraints it, becomes much more difficult to recruit the best minds from overseas. The department faculty strives very hard to obtain extramural funds to support graduate students.

Table 22. Department Enrollment (Fall 1997 to Spring 2003)

Semester/Year	Undergraduate	Graduate	Total
Spring/2003	95	5	100
Fall/2002	109	7	121
Spring/2002	71	12	83
Fall/2001	50	11	61
Spring/2001	78	8	86
Fall/2000	95	14	95
Spring/2000	47	7	54
Fall/1999	104	10	114
Spring/1999	101	11	102
Fall/1998	112	10	122
TOTAL	862	95	938

Table 23. Undergraduate Student Enrollments by Program (1996-03)

	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003
LANDSCAPE ART.	47	55	44	52	42	45	47
NATURAL RESOURCES	47	30	28	27	21	33	37
MASTER/ PLANT SCIENCE			9	16	6	13	12
	129	123	120	133	104	129	137

Table 24. Graduate Students Enrollment 1996-2003

	1998-99	1999-00	2000-01	2001-02	2002-03
Number Enrolled	10	13	6	8	8
Number Graduated	4	3	2	3	2
Pursing Ph.D Degree	2	1	0	0	2

Table 25. Enrollment in the Department by Race and Gender (Fall 1997-Fall 2002)

Program Area	Rank			Gender		Ethnic Background		
	Assistant Professor	Associate Professor	Professor	Male	Female	Black	White	Other
Natural Resources & Earth and Env Science	0	0	4	3	1	1	1	2
Landscape Architecture	1	1	1	2	1	1	2	0
TOTAL	1	1	5	5	2	2	3	2

2. Enrollment of Undergraduate Transfers

Enrollment of Undergraduate Transfers by Program (1997-2002)
(Refer to the Table. 11.)

3. Enrollment in Degree Credit Distance Learning

None

4. Awarding of Degrees

Table 26. Number of Graduates by Gender and Program (2002-2003)

Major or Concentration	Undergraduate		Graduate		Total	
	Male	Female	Male	Female	Male	Female
Agricultural Science/ Natural Resources	0	1			0	1
Agricultural Science/ Earth and Environmental Science	0	0			0	0
Landscape Architecture	3	1			3	1
Plant and Soil Science			1	2	1	2

Table 27. Number of Majors in Honor Program (2000-2003)

Item	Natural Resources	Earth and Env. Science	Landscape Architecture	Total
Honor Graduates			2	2
Honor Students	5	5	1	11
Scholarships Received	4	2	4	10
Waste Management	2	2		4
Golden Key Award				0
Gamma Sigma Delta (Honor Society of Agriculture)			2	2
Service Awards		2		2
Total	11	11	9	31

5. Degrees by Division or level

Refer to Table 26

B. Faculty Development

1. Discovery

The faculty members in the department were discovery oriented by becoming active in research and creativity. The departmental faculty have collaborated with other faculty members within the School and across the campus. Dr. Raczowski, Dr. M. R. Reddy and Dr. Niedziella have collaborated with NC State University scientists. Dr. G. B. Reddy and Dr. Raczowski have a partnership with NRCS in Soil Quality work. Dr. G. B. Reddy has a strong collaboration with USDA-ARS scientists in Florence, SC. Dr. Yang is collaborating with Fort Valley State University. The Agricultural Research Initiatives provide a platform for more collaboration in the future.

a. Number of applications

Faculty has submitted 27 proposals to the funding agencies for grant funds

b. Number of Awards or Grants and Total Amount

Table 28. Extramural Proposals Prepared and Funded

Faculty	Proposals Prepared	Proposals Funded	Amount Awarded
	27	16	\$1,142,103
		11 (pending)	\$1,731,564
SUB-TOTAL			
	Continuation Projects	6	\$1,149,091
TOTAL			\$2,291,194

Table 29. Awards by Sponsor (2002-03)

Faculty/Sponsor		Number	Amount
Isikhuemhen	Golden Leaf Foundation	1	\$355,000
	Z. Smith Reynolds	1	\$ 25,000
Shahbazi – (PI)	DOE, State Energy Office	1	\$110,000
Shirley, V.	USDA-ARS	2	\$102,255
Reddy, G (PI)	USDA-ARS	2	\$30,000
	FUTURES	1	\$15,000
Rackowski	USDA-SARE	1	\$119,848
Reddy, M (PI)	Golden Leaf Foundation	1	\$15,000
Glass	Golden Leaf Foundation (campus allocated money)	2	\$30,000
	NC Biotech Center	2	\$160,000
	USDA-NRCS	1	\$25,000
Reyes (Co-PI)	US Army, Fort Bragg	1	\$100,000
Yang, G. (PI)	FUTURES	1	\$15,000
	Fort Valley State University	1	\$40,000
TOTAL		16	\$1,142,103

2. Engagement

a. Number and Value of Grants and Contracts

Awards submitted and Amount received by Category (See Table 28 and 29)

b. Community Service Activities

The Department faculty participated in the following community and outreach activities (2001-03)

Demonstration of Ag-Biotech Crops on A&T farm
Ag-Teachers Biotech Workshop
Advisory Board in Alamance Community College Biotechnology Program
Speaker for New Garden Nursery
Judging science fairs for Brightwood Elementary and Northeast Middle Schools
Assisting residential owners in water logging and drainage problems
FedEx Airport project environmental feasibility studies
Soil Quality workshops for NRCS and field technicians
Training mushroom production technology for the NC farmers
USDA-ARS customer/partners dialogue workshop
New extension horticulture agents training
Adopt a Highway Cleaning
March-of-Dimes
Golden Leafs' Farmers Schools training in Hertford and Robson counties
North Carolina Alternative Energy Advisory Board
North Carolina Geology Advisory Board
Guilford County Environmental Advisory Board Curriculum for GAMSEC for public schools and students
Annual Beds at Greensboro Arboretum
Landscape Project at NCA&T Admission Office
A master site development for McLeansville Athletic Association
A master site development for St. Francis Springs Prayer Center
A Program Development for an Ecologically Sound International Community on 32 acres, Troy, Vermont.
Guilford Solar Communities Program

3. Other Scholarly and Creative Activities

The faculty members in the department have published five refereed papers, three papers are in review, six proceeding papers, and three non-refereed papers. They have presented 25 papers as a first or co-authors in the abstracts in various professional meetings, such as the 13th ARD Symposium, American Horticulture Society meetings, Southern Agriculture Branch of the American Society of Agronomy, American Society of Agronomy Meetings, Bioenvironmental International Conference, International Congress of Soil Science, National Solar Energy Conference, NC A&T Science & Technology Frontiers Research Symposium, and National Conference on Environmental Science and Technology.

C. Interdisciplinary Activities

Students majoring in Earth and Environmental Science program take OSHA related courses offered through School of Technology. Several research projects are collaborative projects with other departments within the School of Agriculture and Environmental Sciences. Biotechnology and Biodiversity research initiative and Soil and Water quality research initiative programs are interdisciplinary research across the campus.

VI. Analysis and Summary of Data

A. Identify the Overall Strengths and Weaknesses of the Program and Strategies to Address the Weaknesses

Strengths

Faculty and Staff Quality: The faculty and staff members of the department are highly dedicated and enthusiastic about our academic programs, students and research and outreach activities. The faculty of our department received their terminal degrees from prestigious universities of this country. The faculty have a continuous commitment for resident instruction and research in their respective areas. As outlined earlier, some of our faculty won the awards in “Excellence in Teaching” for the School and University. They also won the teaching and research awards presented by the Gamma Sigma Delta, a prestigious Agriculture Professional Society. One of our faculty has received the “USDA Young Scientist Award” .

Students Quality: Students majoring in our department are hard working goal oriented and as a result, they are recruited for jobs by the governmental agencies and private firms. They actively take part in Student Professional Clubs and Campus Student Clubs for their professional development. Our students have participated and presented papers in the professional society meetings. Students who very much wanted to pursue their higher educational goals have been admitted into graduate programs.

Research and Outreach Activities: The faculty in the department strives hard to write as many proposals as they can give the limitations of teaching load and other instructional and committee activities. The faculty was successful in obtaining larger amounts of funding (\$1,142,103 for 2002-03 year) for research and outreach activities. Our faculty was highly involved in training small acreage farmers in growing vegetables and mushrooms. Also, our faculty conducted several workshops for field technicians in the areas of soil quality and constructed wetlands.

Weaknesses

The departmental strengths are also associated with many weaknesses, and a list of strategies to address the weaknesses is provided.

Staffing:

Problem: The department has three secretarial support staff to help coordinate three academic programs and research projects. While the adjunct faculty numbers and research projects are increasing every year, the number of support staff remains the same. The faculty conducting research with one to three projects are burdened without technical help. The staff (secretarial and technical) members have several years of experience but their salaries have had little or no increase. The Earth and Environmental Science Program requires one tenure track faculty person to teach environmental science courses, recruit students, and coordinate the program.

Strategies:

The department is requesting two technical staff (laboratory/field technicians) to assist with the research. The request is being made to the Associate Dean for Agricultural Research Program and to the Dean, School of Agriculture and Environmental Sciences. The secretarial staff positions have been recently up-graded with a salary increase. The existing faculty person who coordinates the Earth and Environmental Science program is engaged in the administration and needs to be absorbed fully in the administration position so that the released position can be filled with a new faculty member.

Enrollment, Retention and Graduation Rates

Problem: Low enrollment, retention and graduation rates continue to be a major problem in the department.

Strategies:**Recruitment**

- The Recruitment Strategic Committee was appointed to develop the strategies. Strategic Plan includes the development of recruitment materials, participation in public exhibits (state fairs), visiting high schools, phone calls, and mailing.
- The reshaping the departmental Web Page will include details of each program.
- Increasing efforts to attract community college students and undecided majors in the university.
- Working with the alumni closely by contacting them on a regular basis.
- Finding scholarship money through foundations and industries.

Retention and Graduation Rates

The number of students recruited into the programs for each academic year is key to the graduation rates. However, in order to increase the graduation rates, the students in the program must be retained and strategies need to be developed.

- Faculty advisors counsel students on a regular basis
- Students falling behind in courses will be sent to the tutorials

- Conference with the student who receives a unfavorable report from Registrar's Office
- Graduate students were monitored for successful passing of the courses, comprehensive examination, research, thesis defense, and thesis completion

Physical Infrastructure

Problem:

Serious classrooms renovation and improvement are required in Carver Hall. The laboratories face excessive heating or cooling which may jeopardize the research results. The Internet wiring to the laboratories is essential for research and need to be completed. Also, the problems range from the lack of appropriate office furniture, insufficient lighting, and no proper place to present the students exhibits.

Strategy:

These problems have been brought to the attention of the appropriate administrators.

Faculty Salaries

Problem:

In comparison with the average faculty salaries in the university, our faculty salaries are extremely low. The faculty salaries are also lower than the faculty salaries of other land grant universities.

Strategy:

Request has been made to the Dean's Office to address this issue.

Operational Budget

Problem:

Limited funds are available for the development of programs.

Strategy:

This issue has been brought to the attention of Dean's Office.

VII. Student Learning Outcomes

Form A

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Bachelor in Agricultural Science/Natural Resources

Program-Level Student Learning Goals

Please use this form to list the student learning goals for all programs in your department/school or attach a list. Use a separate sheet for each program and note that you may have fewer or more goals than space is allotted for here. If needed, make copies of this form.

1. Develop student oral and written communication skills.
2. Enhance awareness of and provide solutions to current issues concerning environmental protection from a soil/plant science perspective.
3. Apply soil/plant principles in solving problems that they may encounter as professionals.
4. Prepare students to qualify to enter graduate programs of study or to pursue career opportunities in the private and public sector.

Adapted from GMU 2002

Form A

North Carolina A&T State University

Program-Level Student Learning Goals (cont.)

Other Programs Outcome Goals such as job placement, graduate school enrollment, success on licensing exams; development of workplace skills such as dependability, initiative, leadership, group-working skills; commitment to citizenship; program satisfaction and job satisfaction; persistence and time to degree, etc. Be specific, e.g. “At least ¼ of each graduating class will apply to graduate school.”

1. Have 30% of the graduates pursue a graduate program of study.
2. Have 60% of the graduates employed by federal or state agencies.
3. Have 10% of the graduates employed within the private sector.
4. Have 10 % of the students graduating with a soil science concentration to pass the state soil science certification exam
5. Have 50% of our students complete additional courses to receive certifications in biotechnology and waste management

Adapted from GMU 2002

Form B

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Bachelor in Agricultural Science/Natural Resources

A. II. Evaluation Methods

In each row, please list methods (measurements used); then identify those methods (measurements) that will be used within the next year or so.

B. Commercially Available Tests/Surveys	
North Carolina Soil Science Certification Test (4)	
Tracking students entering and graduating from the graduate program. Goal (1)	

Adapted from GMU 2002

Form C

North Carolina A&T State University

II. Evaluation Methods

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Bachelor in Agricultural Science/Natural Resources

List methods (qualitative and/or quantitative) and whether these will be used again.

C. Locally Developed Methods	
Courses HORT 608 & NARS 606: Students have to design, conduct research, and prepare written and oral project reports. Goal (1)	Comprehensive final exams: Most courses test students on all material covered during the academic semester. Goal (1), (4)
Laboratory Sessions: Several courses have a laboratory session where students are evaluated by report submission, preparedness and participation. Goal (1), (3)	Written Tests: Courses within the program will have 2 – 4 tests during the academic semester. Goal (1), (4)
Term Papers: About 30 – 40% of the courses within the program require term papers on assigned subject matters. Goal (1)	

Adapted from GMU 2002

Form D

D. North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Bachelor in Agricultural Science/Natural Resources

II. Major Findings and Changes Made to Program as a Result of Assessing Goals

Please list the major findings and program improvements made as a result of assessing student learning and programs outcome goals. Link the findings to the method used.

Student learning does not seem to be a problem and a few courses in horticulture were taught by using Blackboard. Students were encouraged to participate in workshops for improving written and oral communication skills offered through students learning centers.

Making aware of the graduate programs at NCA&T and other institutions.

Adapted from GMU 2002

Form A

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design

Program Name: Bachelor of Agricultural Science/ Earth and Environmental Science

I. Program-Level Student Learning Goals

Please use this form to list the student learning goals for all programs in your department/school or attach a list. Use a separate sheet for each program and note that you may have fewer or more goals than space is allotted for here. If needed, make copies of this form.

1. Develop leadership and logical thinking skills
2. Apply the environmental process to provide safe technology for employers
3. Develop communication technique for environmental activities
4. Apply environmental research through research process and subject knowledge
5. Demonstrate knowledge of environmental ethics

Adapted from GMU 2002

Form B

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design

Program Name: Agricultural Science/ Earth and Environmental Science

II. Evaluation Methods

In each row, please list methods (measurements) used; list the corresponding student learning goal number(s) for each of the methods; then identify those methods (measurements) that will be used within the next year.

E. Commercially Available Tests/Surveys	

Form C

North Carolina A&T State University

II. Evaluation Methods

Department/School Name: Department of Natural Resources and Environmental Design

Program Name: Agricultural Science/Earth and Environmental Science

List methods (qualitative and/or quantitative); list the corresponding student learning goal number(s) and whether these will be used next year.

F. Locally Developed Methods	
Students have to complete research project and/ internship. Students need to take research seminar course, 3 courses in major area, and thesis course. We consider B grade as a bench mark for performance. Goal (1), (2), (3), (4), (5)	50% of undergraduates and 95% of graduate students were expected to pass with B grades but only 20% of undergraduate students achieved a grade of B or better grade.
About 40% of the courses within the program require term papers on assigned subject matter. Goal (1)	
Several courses have laboratory sessions and students are evaluated by their reports and participation. Goal (1), (3), (5)	

Form D

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design

Program Name: Agricultural Science/ Earth and Environmental Science

III. Major Findings and Changes Made to Program as a Result of Assessing Goals

Please list the major findings and program improvements made as a result of assessing student learning and programs outcome goals; describe the decision making process (e.g., who participated (curriculum committee, faculty body, etc.) Link the findings to the method used.

1. Environmental technologies that are environmental friendly, cost effective, efficient, were included in the environmental courses so that graduates have a decent knowledge to offer to employers.
2. Summer internships in federal agencies or private entrepreneurships have helped the communication techniques/skills of students.
3
4
5

Adapted from GMU 2002
Revised 2/03

Form A
North Carolina Agricultural and Technical State University

Department/School Name: School of Agriculture and Environmental Sciences/Natural Resources and Environmental Design

Program Name: Landscape Architecture Program

Program-Level Student Learning Goals

Please use this form to list the student learning goals for all programs in your department/school or attach a list. Use a separate sheet for each program and note that you may have fewer or more goals than space is allotted for here. If needed, make copies of this form.

1. List student learning goals for the program scheduled for review.

1. Develop knowledge, skills, and abilities to apply the subject matter of the professional curriculum in problem definition, information collection, analysis, synthesis, implementation, and communication.
2. Develop knowledge, skills, and abilities to apply historic, aesthetic, and scientific principles to the research, design, planning and management of environments.
3. Prepare graduates for entry-level positions in private or public practice and prepare and encourage graduates to complete the national Landscape Architecture Registration

Other Programs Outcome Goals

2. List any other program outcomes not included in the strategic plan.

1. At least 5% of the students will be in the academic Honors Program.
2. At least 25% of the students will gain experiential learning through internships and cooperative activities.
3. At least 50% of the students pass Landscape Architecture Registration Exam.

Form B
North Carolina Agricultural and Technical State University

Department/School Name: School of Agriculture and Environmental Sciences/Natural Resources and Environmental Design

Program Name: Landscape Architecture Program

II. Evaluation Methods

In each row, please list methods (measurements used); then identify those methods (measurements) that will be used within the next year or so.

Commercially Available Tests/Surveys
Landscape Architecture Registration Examination (L.A.R.E.) Goal (3) 65% expected to pass and 50% passed L.A.R.E.
Qualifying for honors program with 3.0 or above GPA.
As a part of internship or cooperative activity, the summer employer will evaluate the students.

Form C
North Carolina Agricultural and Technical State University

Department/School Name: School of Agriculture and Environmental Sciences/Natural Resources and Environmental Design

Program Name: Landscape Architecture Program

II. Evaluation Methods

List methods (qualitative and/or quantitative) and whether these will be used again.

Locally Developed Methods
1. Track honor students. Goal (1)
2. Student performance is evaluated by way of quizzes, examinations, projects, proposals and juries. Given the size of the faculty, size of classes, and the interaction among the faculty and students, improvements or adjustments are easily made in response to weaknesses or deficiencies as they arise in student performance or class performance. Goal (1, 2)
3. Track participation of students in internships and co-ops. Goal (2)
4. Tracking students employment. Goal (3)

Form D

North Carolina Agricultural and Technical State University

**Department/School Name: School of Agriculture and Environmental
Sciences/Natural Resources and Environmental Design**

Program Name: Landscape Architecture Program

**III. Major Findings and Changes Made to Program as a Result of Assessing
Goals**

Please list the major findings and program improvements made as a result of assessing student learning and programs outcome goals. Link the findings to the method used.

**1. Findings from Quizzes, examinations, projects, proposals and juries and
Consequent Programmatic Changes**

Students knowledge, skills and abilities vary according to student age(s), ethnicity, and student overall goals and attentions. Goal (1, 2)

**2. Findings from employer about the students (employee) satisfaction and
recommendations for program improvement. Goal (3)**

Form A

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Master of Science in Plant and Soil Science

I. Program-Level Student Learning Goals

Please use this form to list the student learning goals for all programs in your department/school or attach a list. Use a separate sheet for each program and note that you may have fewer or more goals that space is allotted for here. If needed, make copies of this form.

1. Train students in applying sound scientific principles in research design, planning and management of natural resources.
2. Enhance graduate student communication skills including oral and written.
3. Involve students in identification of problems in Natural Resources and Environment and developing solutions.
4. Prepare students with appropriate skills for the diversified job market and Ph.D. programs.
5. Strengthen student background in soil science in order to pass the exam for state licensure as a soil scientist.

Adapted from GMU 2002

Form A

Program-Level Student Learning Goals (cont.)

6
7
8

Other Programs Outcome Goals such as job placement, graduate school enrollment, success on licensing exams; development of workplace skills such as dependability, initiative, leadership, group-working skills; commitment to citizenship; program satisfaction and job satisfaction; persistence and time to degree, etc. Be specific, e.g. “At least ¼ of each graduating class will apply to graduate school.”

1. 50% percent of the graduates will be employed by federal, state and local governments.
2. 40% of the graduates will pursue Ph.D. program.
3. 10% of the graduates will be employed by the private sector.
4. 30% of the graduating students will pass the state soil science certification exam.
5. 75% of the students will participate in Soil Science Society of America and American society of Agronomy annual meetings and present research data.
6. 40% of our students complete required courses to obtain certifications in biotechnology and waste management.

Adapted from GMU 2002

Form B

North Carolina A&T State University

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Master of Science in Plant and Soil Science

II. Evaluation Methods

In each row, please list methods (measurements) used; list the corresponding student learning goal number(s) for each of the methods; then identify those methods (measurements) that will be used within the next year.

G. Commercially Available Tests/Surveys	
40% of graduate students passed the North Carolina Soil Science Certification Test. (performance indicator) Goal (2)	
40% of graduate students received Waste Management Certificate	

Form C

North Carolina A&T State University

II. Evaluation Methods

Department/School Name: Department of Natural Resources and Environmental Design
School of Agriculture and Environmental Sciences

Program Name: Master of Science in Plant and Soil Science

List methods (qualitative and/or quantitative); list the corresponding student learning goal number(s) and whether these will be used next year.

H. Locally Developed Methods	
1. Comprehensive examination and thesis. Goals (1)	
2. Thesis and thesis defense. Goal (1)	

Form D

North Carolina Agricultural and Technical State University

School/Department Name: School of Agriculture and Environmental Sciences/Natural Resources and Environmental Design

Program Name: Master of Science in Plant and Soil Science

III. Major Findings and Changes Made to Program as a Result of Assessing Goals

Please list the major findings and program improvements made as a result of assessing student learning and programs outcome goals. Link the findings to the method used.

1. Findings from students' thesis completion

Finding: Students have hard time to write thesis in time.

Changes: Students were advised to attend the thesis writing workshops conducted by the Graduate School.

2. Most of the foreign nationals are seeking Ph.D. degree. Students pursuing professional career in state government are applying for the State Soil Science Certification Exam.

3. Graduate students interested in environmental careers have taken courses to qualify for Waste Management Certificate.

APPENDICES

Table 7. Number of Graduates by Major (2002-2003)

Major or Concentration	Undergraduate		Graduate		Total	
	Male	Female	Male	Female	Male	Female
Agricultural Science/ Natural Resources	0	1			0	1
Agricultural Science/ Earth and Environmental Science	0	0			0	0
Landscape Architecture	3	1			3	1
Plant and Soil Science			1	2	1	2

Table 8. Student Credit Hours (SCH) Generated by Program and Faculty

Natural Resources and Environmental Design									
Fall 2002 Semester					Spring 2003 Semester				
Faculty	Course	Credit Hours	Enrollment	SCH	Faculty	Course	Credit Hours	Enrollment	SCH
Fersner	CAAE 204	3	34	102	Fersner	CAAE 102	2	20	40
Fersner	AGEN 216	2	8	16	Fersner	CAAE 204	3	18	54
Gayle	AGEN 701	3	2	6	Fersner	AREN 685	3	8	24
Glass	HORT 334	3	8	24	Fersner	CAAE364	3	26	78
Glass	HORT 610	3	4	12	Gayle	CIEN 664	3	8	24
Glass	LDAR 302	3	17	51	Gayle	NARS 520	1	5	5
Harris	EASC 201	3	101	303	Gayle	NARS 720	1	4	4
Howard	LDAR 170	3	22	66	Glass	HORT 611	3	4	12
Howard	LDAR 270	3	17	51	Glass	LDAR 303	3	8	24
Howard	LDAR 570	4	4	16	Harris	EASC 201	3	113	339
Lewis	EASC 201	3	49	147	Hollingsworth	LDAR 360	3	4	12
Niedziela	EASC 444	3	13	39	Hollingsworth	LDAR 550	3	4	12
Phillips	AGEN 501	1	8	8	Howard	LDAR 171	3	13	39
Raczkowski	CROS 607	3	20	60	Howard	LDAR 371	3	5	15
Reddy, G	SLSC 338	4	11	44	Howard	LDAR 510	4	4	16
Reddy, G	NARS 799	6	7	42	Howard	LDAR 520	2	7	14
Reddy, G	SLSC 622	3	15	45	Lewis	EASC 201	3	50	150
Reddy, M	EASC 201	3	51	153	McMillan	AGEN 114	3	14	42
Reddy, M	SLSC 717	3	5	15	Phillips	AGEN 501	1	1	1
Reyes	AGEN 600	3	5	15	Phillips	AGEN 502	2	7	14
Reyes	CAAE 100	2	36	72	Raczkowski	SLSC 632	3	6	18
Robinson, J	LDAR 460	4	9	36	Reddy, G	EASC 699	3	15	45
Robinson, J	LDAR 470	4	9	36	Reddy, G	NARS 799	6	12	72
Robinson, J	LDAR 560	3	4	12	Reddy, M	SLSC 634	4	6	24
Robinson, M	LDAR 500	3	5	15	Reddy, M	SLSC 727	3	6	18
Romie	LDAR 370	3	10	30	Reyes	AGEN 520	1	4	4
Shahbazi	AGEN 404	3	6	18	Reyes	AGEN 624	3	8	24
Shahbazi	AGEN 440	3	4	12	Reyes	EASC 201	3	69	207
Uzochukwu	EASC 201	3	88	264	Robinson, J	LDAR 230	3	18	54
Yang	NARS 110	3	17	51	Robinson, J	LDAR 461	4	8	32
					Robinson, J	LDAR 471	4	8	32
					Robinson, M	LDAR 571	4	4	16
					Shahbazi	AGEN 330	4	6	24
					Shahbazi	AGEN 523	3	5	15
					Uzochukwu	EASC 201	3	84	252
					Uzochukwu	EASC 309	3	29	87
					Yang	NARS 110	3	17	51
					Yang	HORT 600	3	5	15
					Yang	HORT 7'00	3	4	12
DEPART- MENT TOTAL	30	93	589	1761		39	115	637	1921

Table 9. Previously Projected Undergraduate Enrollment for the Department

Classification	98-99	99-00	00-01	01-02	02-03
Freshmen	20	18	19	15	10
Sophomores	25	17	15	10	8
Juniors	35	27	14	12	12
Seniors	23	42	38	13	7
TOTAL	123	104	86	50	37

Table 10. Previously Projected Graduate Enrollment in Plant and Soil Science

Program	98-99	99-00	00-01	01-02	02-03
Plant and Soil Science	14	12	16	16	14
TOTAL	14	12	16	16	14

Table 12. Number of Graduates by Major (1998-2003)

Major or Concentration	Undergraduate		Graduate		Total	
	Male	Female	Male	Female	Male	Female
Agricultural Science/ Natural Resources	3	4			3	4
Agricultural Science/ Earth and Environmental Science	10	7			10	7
Landscape Architecture	14	6			14	6
Plant and Soil Science			10	7	10	7