

## Unit Overview

### Summary

The Department of Crop and Soil Sciences (CRSS) is a multi-functional, inter-disciplinary, multi-locational department committed to program excellence. CRSS supports research, teaching, and extension programs at the Athens, Griffin and Tifton campuses. Programs focus on crop breeding/genetics/genomics, crop management and physiology, environmental sciences, and weed science. Faculty work on a diverse array of row crops, vegetables and forages; water quality; soil, water and waste management; crop physiology; weed ecology and management; pesticide fate; and carbon flux in crop canopies. Faculty strive, through their research programs, to discover new knowledge and evaluate innovative concepts and technologies to enhance science and to help ensure sustainable natural resources and a profitable agro-ecosystem. Extension faculty develop educational information and programs that are practical and available to our agricultural agents, farmers, industry, government and other clientele.

Teaching faculty are responsible for five undergraduate majors, two areas of emphasis and one minor: Turfgrass Management, Water and Soil Resources, and Environmental Chemistry; a Plant Science Area of Emphasis in Applied Biotechnology and Biological Sciences, and a minor in Crop Sciences. In addition to the aforementioned majors offered at the Athens campus, Crop and Soil Sciences faculty teach courses at the Tifton and Griffin campuses that support the department's Agri-Sciences and Environmental Systems, and Environmental Resource Science majors, respectively. CRSS offers a Master of Science degree in Agronomy and a Doctor of Philosophy degree in Agronomy. CRSS also offers a non-thesis Master of Crop and Soil Sciences degree and participates in an interdepartmental Master of Plant Protection and Pest Management degree. CRSS continually strives to enhance (both qualitatively and quantitatively) teaching, research, and extension programs.

### Departmental Mission

The vision of CRSS is to continue to be recognized by its clientele (eg., farmers, agri-industry, environmental interests, food processors, consumers, urban interests, educational interests, governmental agencies, financial institutions, general public, and wholesale/retail trade), partners (ie., all individuals and organizations that collaborate with us working towards science based information), colleagues, and policy-makers as a leading authority in the crop, soil, and environmental sciences and a respected provider of leading edge technology and science-based knowledge. The mission of CRSS is to provide quality education in the basic and applied sciences as they relate to environmental and agricultural systems; to seek, verify, publish and/or make widely available and apply scientifically based knowledge related to agriculture and the environment. More specifically, the purpose of CRSS is to:

- 1) Provide baccalaureate and graduate education in crop, soil, and environmental sciences that prepares students to effectively contribute and excel in a global community.
- 2) Inquire into the nature of crops, soils, and the environment, through scientific discovery of new knowledge, and to apply that knowledge in sustaining environmental quality and enhancing the viability of agricultural systems.
- 3) Serve the public through timely technology development and education of producers, consumers, policy makers, and agribusiness using relevant, accurate and unbiased information.

CRSS shares the values of the College of Agricultural and Environmental Sciences:

Communication--We have a responsibility to communicate useful, research-based information. We listen to our clientele and value their input.

Cooperation and Respect--We value the contributions of each individual. We believe diversity in people and ideas is a strength. We value cooperative efforts.

Economic and Environmental Focus--We strive to strengthen the economic future of Georgia agriculture and to protect and conserve the natural resources.

Excellence--We strive for excellence in our work. We value creativity, originality and innovation in the pursuit of knowledge and service.

Integrity and Accountability--Our credibility, objectivity and honesty must be beyond reproach. We seek to interpret and deliver unbiased, relevant information effectively and quickly.

Quality Education--We are dedicated to providing the best possible educational opportunities for youth, adults and families in the classroom and the community.

The Vision to Lead--We are committed to shaping the future. We accept our role to provide leadership and to develop leaders in the agricultural and environmental community.

## **Historical Background**

The Georgia State College of Agriculture and Mechanic Arts opened in Athens on May 1, 1872. The first department established within the college was the Agronomy Department in 1908. In 1931, the Georgia General Assembly reorganized higher education into a University System, under a State Board of Regents and a Chancellor. Each educational division fell under its jurisdiction, including the College of Agriculture, the experiment stations, and the extension service. Soon a resolution from the regents redefined the College's mission as solely teaching—providing an education to produce practical farmers. The College of Agriculture underwent a major reorganization in the early 50's. The Regents appointed a college Dean to oversee all three functions. The new structure created a Division of Agronomy within the College of Agriculture. The Division of Agronomy consisted of four departments (College Station at Athens, Georgia Experiment Station at Griffin, Coastal Plain Experiment Station at Tifton, and Extension) with a Head of each department. The Heads at Coastal Plain Experiment Station and Georgia Experiment Station were responsible for research with the Head of Extension having multi-locational responsibilities. The Head of the College Station had both research and teaching responsibilities as well as serving as Division Chair over all four departments. The Division Chair's role was to facilitate collaboration between the departments and to provide programmatic direction. The Division Chair coordinated programs with the College Dean and the newly appointed Associate Directors representing Resident Instruction, Experiment Stations and the Extension Service. Starting in the early 1950's, several branch and field stations were established around the state and since 1953, the Department has maintained an Athens research farm and greenhouse complex. In 1985, the Departments of Agronomy were heavily involved in production agriculture research and extension, with strong programs in teaching. During the early 90s, there was increasing emphasis on environmental programs, including the development of three new undergraduate majors in the Department at Athens, including one with primarily environmental emphasis. Those majors were: 1. Environmental Soil Science, 2. Crop Science, and 3. Turfgrass Management. To encourage environmental research, two faculty were hired with joint appointments between CRSS and the Institute of Ecology. Two faculty at the Savannah River Ecology Lab were also given partial appointments in CRSS. In 1992 the College changed its name from the "College of Agriculture" to the "College of Agricultural and Environmental Sciences". The Dean of the College was given full budgetary authority over all functions in the college and the new title of Dean and Director. There were respective Associate Deans named for each of the functions to assist the Dean and Director. The College restructured all departments, including Crop and Soil Sciences, creating a single department from the original four. The Department Head at Athens was appointed to head the single department, with the previous department heads of the other units remaining as unit leaders to assist the department head. In 1997 a new title of REI (Research, Extension, Instruction) Coordinator was given to the unit leaders who assisted the Department Head. Administrative staff at Tifton and Griffin were transferred to the local Assistant Dean. This administrative structure continues to the present time. In an effort to reinvigorate CRSS's undergraduate enrollment, in 2003, the Agricultural Sciences and Environmental Systems major in Tifton and the Plant Science Area of Emphasis in Applied Biotechnology major in Athens majors were offered. In 2005, the Water and Soil Resources and Environmental Chemistry majors in Athens and the Environmental Resource Science major in Griffin were first offered. In 2006, CRSS began to re-fill vacant positions (7) and received the first college Georgia Power Professorship in Soil Chemistry. A complete history of the department can be found in Appendix A.

### **Departmental Structure and procedures**

CRSS has 37 faculty (36 tenure track and 1 public service with five additional positions presently being filled), 43 staff, and 3 Assistant Research Scientists. In addition, CRSS supports 4 Teaching Assistants and cost shares many of the departmental graduate student assistantships. Through extramural funding the CRSS faculty also support staff, Assistant Research Scientists, Post Doctoral Associates and graduate students. Departmental programs and activities are coordinated through a collaboration with the faculty, university, college, county and departmental administration, county agents and external stakeholder organizations. The organizational structure and individual staff responsibilities are detailed in the Faculty/Staff section of this report. Procedures, rules, guidelines, standard operating procedures and forms are made available through our administrative offices or on the web ([www.cropsoil.uga.edu](http://www.cropsoil.uga.edu)). The Department Head manages faculty, staff and students at Tifton, Griffin and Athens, a 520 acre farm, a greenhouse complex, a state-wide variety testing program and an analytical laboratory in addition to being administratively responsible for the state-wide teaching, research and extension programs. The overall governance of the Crop and Soil Sciences Department is articulated in the “By-Laws.” (See appendix B). To assist in this responsibility, CRSS maintains an Executive Committee comprised of six coordinators (3 REI’s--one for each location, Extension, undergraduate and graduate) and 13 standing committees that function to facilitate faculty governance as related to policy and procedure issues. (See appendix C). The Department Head facilitates a Spring and Fall faculty meeting to consider promotion and tenure, post tenure review, three year review and other issues important to CRSS. In addition, the Department Head conducts routine (approximately every 6 weeks) meetings with faculty and staff at all three locations and interacts with faculty via videoconferencing as needed. The Department Head serves as the primary liaison for external stakeholder groups and functions to coordinate university activities relevant to CRSS, facilitates proposed policy changes directly through the appropriate committee and presents recommendations to the faculty for consideration and manages the rules, procedures and regulations that are consistent with departmental By-Laws and/or university policies. This includes the appointment of the REI’s, Extension, undergraduate and graduate coordinators; making teaching assignments; managing appropriate teaching EFT appointments; ensuring successful student record oversight; ensuring appropriate student advisement; developing and distributing effective recruitment material; administering the development of new majors and areas of emphases; making recommendations for faculty and staff appointments, reappointments, promotions and nominations for graduate faculty status; preparing the annual budget and proper expenditure of departmental funds and use of property.

Implementation of the departmental program responsibilities requires a dedicated and well trained administrative staff. The staff strives to provide effective administrative and operational support to the faculty, staff and students. CRSS presently has a Administrative Specialist I, Senior Accountant, Administrative Associate II, Administrative Assistant II, Degree Program Assistant, Greenhouse manager, Research Professional II (farm manager), Ag Research Specialist, and a Farm Worker. In addition, the Department Head works closely with the administrative staff (who report to the appropriate Assistant Dean) at Tifton and Griffin to ensure appropriate support.

### **Progress since last review**

The last review of CRSS was in 1999. The review team report, the Department Head’s initial response, the one year progress report are attached in Appendix D. In addition, the Department Head’s annual reports address issues raised in the 1999 PRAC report (see appendix E). In response to the review, a Strategic Plan, an Operational Plan, and a Major Issues document were developed (Appendix E). CRSS has continued to succeed even while program support has been reduced by 25% which resulted in a loss in faculty, staff and operational funding. CRSS has strengthened research programs in molecular biology and environmental sciences, maintained research programs in crop management, lost expertise in crop physiology and soil science, enhanced teaching programs with new majors and courses and course improvements, participated in the establishment of multi-locational and interdisciplinary majors,

increased extramural funding and improved extension through diversified methods of information transfer and educational program delivery.

### **Current Strengths, Opportunities and Challenges**

At the present time, CRSS has a tremendous opportunity to take advantage of the interdisciplinary and multi-locational programs that are in place (See Teaching section). The undergraduate curriculum committee now has state-wide representation. The interdisciplinary nature of the undergraduate majors at all three locations will provide students with excellent educational and employment opportunities. Aggressive recruiting in terms of brochures, displays, in-person recruiting, and offering several courses at locations on the Athens Campus more convenient to the general student population to attract undecided students, should all work in concert to provide CRSS with an excellent opportunity to increase undergraduate enrollment on a statewide basis. CRSS has the capacity to significantly increase graduate student numbers. Faculty at all three locations are encouraged to participate in graduate student education. The Graduate Coordinating committee membership now has all three locations represented. CRSS has decided to maintain state-supported graduate student assistantships through a cost-share program with the faculty. Research and Extension programs presently are well-supported by extramural funding (both competitive and non-competitive). This support should continue at the present level or increase in the future. Publicly-released cultivars should continue to provide funding that will be shared between the inventor, the inventor's program, the department, the college, and the university. Faculty presently have access to adequate laboratory, field, greenhouse and equipment facilities to support the programs, but funding to continually upgrade and maintain these facilities will remain a challenge. The multi-locational nature of CRSS is both a strength and a challenge. Each location has its own unique mission to provide the college with an opportunity to meet the needs of the State of Georgia on a regional basis. The focus at the Griffin campus on the urban related issues provides our department with an unique opportunity to address this specific issue in a rapidly-urbanizing area of the state. Tifton is strategically located to address the needs of the traditional agronomic area of the state, and provides us with an excellent opportunity to address the specific needs of agriculture Georgia. Athens faculty will continue to have outstanding opportunities to form cooperative relationships which will continue to result in the sharing of resources across the campus. These synergistic partnerships support efforts in applied and in fundamental research and both undergraduate and graduate education.

### **Support of College Goals (See Appendix E)**

*Focus on "college first," removing barriers—real or perceived—that unnecessarily separate functions, location or departments:*

CRSS has a multi-functional and multi-locational mission. As a result, administration and faculty must cooperate with colleagues across colleges, departments and campuses to maximize our effectiveness regardless of location or affiliation.

*Develop a unified voice so that the College can provide leadership in the agricultural and environmental communities:*

Faculty, staff, students and administration all work toward enhancing the sustainability of agriculture and the quality of the environment. We all strive to work toward a common goal of programmatic excellence and as a result hope that our stakeholders view us as leaders. Constituents seek our advise, input and collaboration on scientific, practical, policy and regulatory issues which is an indication of our leadership role in the agricultural and environmental communities.

*Enhance opportunities for teamwork and cooperation efforts to achieve our common mission:*

The establishment of teaching programs at Tifton and Griffin has provided CRSS faculty with common goal: offer relevant undergraduate majors and help our college increase enrollment. CRSS faculty routinely work within and between multi-disciplinary, multi-functional teams, both formal and informal. Many issues confronting all three land grant functions require dynamic, multi-disciplinary collaborations. Thus, the ability to work “seamlessly” between colleges, departments and locations helps promote successful programs.

*Eliminate forms of internal competition that tear at the fabric of unity and teamwork:*

College administration and staff support has been reorganized to encourage better communication and cooperation. Both college and department budget decisions are discussed with faculty at the Spring and Fall faculty meetings and with the departmental Executive Committee. This provides an opportunity for a better understanding of our resource situation and fosters a consensus process for allocations.

*Foster teamwork with agencies, institutions, businesses and organizations that share our mission:*

Administration and faculty have numerous relationships with professional groups based on common interests and the fact that contemporary problems require a team approach to develop workable solutions. The increasingly complex nature of agricultural and environmental issues has necessitated both long-term and ephemeral teams within the university and between organizations.

### **Support of University Goals (Appendix E)**

The focus, implementation and outcomes of programs in CRSS align well with the three revolutions of American higher education: *Information technology and the new learning environment, the globalization of everything, and the new world of biology*. More importantly, CRSS is examining and restructuring programs that parallel the three university strategic directions: *Building the new learning environment, research investment and competing in a global economy*. By following all of the three strategic directions CRSS will be instrumental in helping UGA be an active participant in higher education’s revolution. We are committed to significantly contributing to the university achieving its goals. Faculty, staff and students are continuously looking for innovative approaches to building a new learning environment by utilizing techniques that enhance instruction, research and extension. We take great pride in our personalized approach to education. We believe that students need to experience each subject in a manner that truly enhances their conceptual and cognitive understanding of course material. Faculty are always available after class to assist and advise students. Many faculty provide students with a “customize” educational experience through special topics courses. Through a special initiative, the College and department provided students with an opportunity to experience research by funding undergraduates to work directly with CRSS faculty. Several CRSS faculty mentor students in the “young scholars program.” Many courses provide “hand-on” experience through laboratories and field trips. Students are provided with access to contemporary instrumentation, equipment and facilities. Graduate Teaching Assistants are assigned to courses based on their area of expertise. This provides graduate students with teaching experience and our students with additional instructors. Several courses are presently delivered on the web and much of our course information is presently web based. Web based courses provide educational access to students who are “time” or “place bound”. CRSS supports a certificate program in Environmental Ethics that provides a diverse range of students with exposure to an increasingly important subject. All extension information is presently web based and a significant amount of research information is available on the web. Although extension faculty strive to make all information electronically based, the foundation of their programs is still “first-hand” experience. All extension faculty have “teams” comprised of interdisciplinary scientists that personally interact with industry professionals, Ag. Agents and many farmers. They use these relationships to maintain an in-depth understanding of the problems and create practical solutions. Several faculty are considering the use of new video-conferencing technology to deliver courses and more conveniently communicate between

locations. CRSS continuously invests to maintain our department as leaders in agricultural research. Our faculty are engaged in “cutting edge” science through their ability to conduct outstanding research and consequently obtain resources needed to staff and acquire needed the best equipment and facilities. The exemplary extramural funding, publications and prestige of CRSS faculty are a clear indicator of our commitment to investing in research. CRSS presently has 2 Distinguished Research Professors, 1 Eminent Scholar and 1 Georgia Power Professor. All CRSS programs are geared towards the need to globalize. Our research programs “tap” into knowledge that is available worldwide and travel globally to interact “first-hand” with scientists to enhance cooperation and the exchange of information and experience. Faculty incorporate a global perspective in the classroom and one faculty member teaches a study abroad to help provide students with international experience. Our extension faculty communicate and travel world-wide to provide our farmers with the latest production methods. CRSS recognizes that all information must be science based so we will continuously investment in all aspects of research.