

DEPARTMENT OPERATIONAL PLAN

COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES MISSION:

The mission of the University of Georgia College of Agricultural and Environmental Sciences is to seek, verify, and apply knowledge related to agriculture and the environment, and to disseminate this knowledge through student education and public outreach programs.

DEPARTMENT OF CROP AND SOIL SCIENCES MISSION PER STRATEGIC PLAN:

The mission of the Department of Crop and Soil Sciences is to provide quality education in the basic and applied sciences as they relate to crops, turf, and soils; to seek, verify, and apply knowledge related to agriculture and the environment.

DEPARTMENT PURPOSE STATEMENT PER BYLAWS:

The purpose of the Department of Crop and Soil Sciences is to provide programs in teaching, research, and extension in crop and soil sciences. As part of the Land Grant mission, these programs seek to serve the needs of the people of the state of Georgia, the nation, and the world.

INTRODUCTION:

Our department has labored through the development of the Strategic Plans for the University and College, the development of a Program Review and Program Plan for the College, the development of Reports for the CSREES/University reviews (25-30 April 1999) and the first approximation of the department Strategic Plan. There are many numbers and much wisdom in these reports but none of them developed "The Road Map for the Department". Therefore, I will submit my proposal of the Operational Plan for the department that will guide my decisions over the next several years. This plan must consider the college and department mission statements and the purpose statement for the department as stated in our bylaws. The structure that has been developed for the department can be found in the CSREES/UNIV document Vol. I of II. This structure will serve the department during my tenure as Department Head.

In developing this operational plan the following facts must be understood:

- 1) The department will have faculty and strong programs located at the three campuses (Athens, Griffin, and Tifton).
- 2) It is almost impossible to move faculty from one campus to another under the present administration.
- 3) Faculty will not be reassigned from another department into our department.
- 4) In the near future there will be no increase in departmental space at the three campuses except for the proposed AGTECH building and possibly a greenhouse at the Athens campus.

INSTRUCTION PROGRAM INITIATIVES.

I. Undergraduate Instruction:

GOALS:

1. Provide a recruiting program to attract the most qualified students into the department.
2. Provide curricula to prepare those undergraduate students: 1) to be society ready, 2) internationally aware and 3) for a life-long learning experience.

OPPORTUNITIES:

1. A recruiting committee has been developed to work with the Associate Dean, Academic Affairs, to develop strategies for recruiting students from the university campus, other campuses within the state, and graduating high school students.
2. Recently, faculty members involved with the Environmental Soil Science instruction program held a two-day retreat, away from campus, to discuss and to recommend to the department an improved curriculum.
3. The Crop Science faculty have proposed changing the crop science major to include two areas of emphasis, science area, and management area with the intent of encouraging students who opt for the science area to take more courses in the basic sciences in preparation for a lifetime learning experience. The two areas of emphasis will provide a management curriculum for those students who wish to enter into agricultural production professions.

II. Graduate Student Instruction:

GOALS:

1. To attract high quality undergraduate students into graduate programs.
2. To challenge the graduate students with high quality courses and a rewarding research experience.
3. Provide opportunities of graduate programs for non-research careers.

OPPORTUNITIES:

1. The high quality research programs in molecular biology/genetics, crop physiology, and environmental soil sciences will attract quality students.
2. The high quality research programs in turfgrass management, weed science, and crop management will continue to place excellent post-graduates in the job market.
3. A non thesis masters degree program will be submitted to the University Council to offer a non thesis masters degree. This degree program will be attractive to the practicing clientele in the non-research careers (e.g. county agents, NRCS staff, turfgrass managers, and crop consultants).
4. Faculty at the three campuses must become involved in graduate student training to assure a critical mass for graduate courses in the department.

RESEARCH AND EXTENSION PROGRAM INITIATIVES

I. Program: Exploiting Applied Plant Biotechnology:

Need: The sophisticated technology currently being developed in molecular/genetic biology will increase the rate of change in agriculture over the next decade. The University of Georgia is dedicated to making a major investment to increase applied genetic technology and our knowledge of the genome. We must exploit this technology for the benefit of our clientele.

- 1) Biotechnology must be made available to crop breeders/geneticists to develop:
 - a) Crop plants (to include turfgrass) with improved production properties (e.g. resistance to pests and pesticides, ability to thrive on marginal land, improved yields);
 - b) Crops with improved management and handling properties;
 - c) Crops with value -added properties (e.g. improved nutritional status, improved flavor);
 - d) Plants which yield entirely new crops (e.g. pharmaceuticals, oils, fuel and other non-food products).

- 2) Biotechnology must be made available to faculty in addition to crop breeders/geneticists to develop:
 - a) Designer microorganisms for remediation of point and non-point sources of environmental contamination (e.g. applications to crops and spills);
 - b) Marker assisted identification of microbes in surface and ground water for origin determination (e.g. microorganisms from septic tanks and farm animal holding facilities).
 - c) Marker assisted identification of weed biology, population dynamics, and competitiveness.

Relation to CAES Program Review and Planning Report (PRPR), CAES Goals, and Coalition for Research in Plant Systems Report (CROPS):

- a) Biotechnology received a high rating in the PRPR for: 1) quality indicators, 2) alignment with CAES goals, and 3) demand for program area.
- b) The goals of CAES includes “Enhance commitment to research in molecular genetics and biotechnology to improve plant and animal enterprises through redirection of existing resources and increased extramural funding”.
- c) The Coalition for Research on Plant Systems (CROPS) includes in their goals the improvement of production systems and improve processing, quality,

and nutritional value of plants and their products. This group lists as priority 1 “expand the science and application of plant genomics, which will provide the basic knowledge and technology required to increase the productivity and usefulness of plants.

Impact: Biotechnology provides both the tools needed for increasing the gene pool

available for plant improvement, and the means for bringing crop plants modified by these genes to market more rapidly. Exploitation of plant biotechnology, which is estimated to reach an annual market value of as much as \$20 billion by 2010, requires the ability to identify, acquire, conserve, characterize, transfer, and evaluate genes in multiple genetic backgrounds. This technology must be utilized by all disciplines to enhance the agricultural production systems.

Resource Needs: In order to exploit the developing biotechnology, faculty, staff, and support funds will be needed to make AGTECH available to all breeders and other faculty in the department.

II. Program: Improve Profitability of Agricultural Production Systems:

Need: The market-place competitiveness of the Georgia farmer is dependent on the efficiency of crop production systems and the profitability of the on-farm management strategies. Systems need to be developed that decrease input costs and reduce on farm production risks. The production risks can be reduced with diversification and improved management systems. The following areas have been identified to receive research/extension efforts to keep the Georgia farmer competitive at the market place. Additionally, the college must continue to develop efficient and environmentally friendly management strategies for our urban clientele.

- a) Develop precision management strategies.
- b) Develop/demonstrate cropping/tillage systems.
- c) Calibrate fertilizer recommendation curves and improve fertilizer recommendation model(s).
- d) Develop weed management systems that are effective, efficient, and environmentally safe.
- e) Develop alternative/emerging crops to include genetically transformed plants.
- f) Be aware of water availability for irrigation and develop strategies for water use efficiency through irrigation scheduling and drought resistant species.

Relation to PRPR, CAES Goals, and CROPS:

- a) In the PRPR, the majority of the listed areas targeted for research/extension efforts received a high rating for demand and alignment with CAES goals and mid to high in quality indicators.
- b) In his presentation Georgia Agriculture-Beyond 2000, **Dean Buchanan stated** that "Agriculture is highly dynamic. It is constantly changing, making one of our challenges in CAES to try to stay ahead of the problems. With less than 2 million farms in our nation, our farmers must produce over six fold what they provided 50 years ago. Farming techniques and technology have changed dramatically making it more expensive to operate; therefore, **our researchers must find ways to cut costs and ensure the profitability of this industry. Irrigation has increased 85%- a phenomenal figure. New crops continue to emerge** for Georgia.

Today we have the carrot industry in our state. We've eradicated that boll weevil and cotton is king again. **And we are a leader in new technologies, like precision farming.**

- c) Priority 3 of **CROPS' 99 Research Priorities** is to: "Develop mechanisms to enhance producer profitability, while minimizing risk of financial loss and ensuring food safety and security".

Impact: The sustainability of farming in Georgia is increasingly dependent on the development of efficient and profitable agricultural production systems.

Resource Needs: Faculty, staff, and support are needed for this program. Some faculty and staff have been and will continue to be redirected into programs such as this.

III. Program: Ensure opportunities for protection of our natural resources.

Need: Human kind, in their quest for food production and the easy life, has continually placed insults on the environment (soil, water, and air) and often these insults are interpreted as degrading to the environment. However, 'Mother Nature' has provided us with an environment that is forgiving and many of our insults can be easily corrected. Probably the most degrading and least reversible effects results from soil erosion which generally reduces the productivity of the eroded area. Short term effects on the environment that arise from the introduction of point and non-point sources of contaminants are less degrading. The increasing use of pesticides and the confinement of animal production systems will continue to insult the environment. It is important to conduct the following research/educational programs in order to minimize those insults that arise from plant and animal management systems:

- a) Determine the fate of pesticides and nutrients applied for crop and turfgrass management strategies.
- b) Determine the impacts of confined animal production on the three components of the environment.
- c) Determine the relative contribution of contaminants to the environment by urban and rural communities.
- d) Develop strategies for the beneficial application of animal waste for crop production systems.
- e) Develop Best Management Practices for handling animal (to include human) wastes under high population habitation conditions.
- f) Monitor water availability and develop strategies for water use efficiency through effective irrigation scheduling.
- g) Develop/demonstrate Best Management Practices to include cropping/ tillage systems that result in minimum impact to the environment (e.g. minimize water use, soil erosion, and offsite movement of pesticides and nutrients).

Relation to PRP and CROPS' 99 Goals:

- a) In the **1997 PRP REPORT**, the research rating for Environment Mgt. and water and watersheds was high for demand and alignment with CAES goals and mid for quality indicators.
- b) Goal 3 of the **Crops' 99 Goals** is: Ensure opportunities for protection of our natural resources. "Agriculture affects the environment in many ways, both positively and negatively. To assure natural resource protection and minimize negative environmental impacts, there must be an understanding of air, soil, water quality and water-use issues and a scientific-basis for sustainable management of the biologically complex agro-ecosystem."

Impact: Probably the greatest impacts on agricultural production in Georgia will arise from actual and perceived concerns for the environment. Water availability and quality, air and soil quality, and site productivity and quality are major concerns of people in Georgia and surrounding states. The perceived concerns that must be alleviated through education and those concerns that are factual must be handled through research and development of practices to reduce the basis of those concerns.

Resource Needs: Faculty, staff, and support are needed for this program. Some faculty and staff have been and will continue to be redirected into programs such as this.

IMMEDIATE PERSONNEL NEEDS:

A. FACULTY POSITIONS.	Description	AES¹	CES²
I. Program: Exploiting Applied Plant Biotechnology.			
1. Cotton Genomics	To conduct research on the cotton genome for improved germplasm development.	*	
2. Molecular Biologist/ Grass Genomics	To conduct research on use of biotechnology to improve small grain and forage crops and turfgrass species.	*	
3. Weed Molecular Biology and Genomics	To conduct research on molecular biology and population ecology and apply genomics to growth, Development, and competitiveness.	*	
4. Plant Molecular Geneticist	To conduct research on plant development and abiotic plant stresses in agronomic and turfgrass species.	*	

II Program: Improve Profitability of Agricultural Production Systems:

5. Weed Scientist	To conduct research on turfgrass weed management and ecology.	*
6. Turfgrass Plant Nutrition Scientist	To conduct research on plant nutrition in turfgrass species.	*
7. Forage Specialist	To deliver educational programs on forage crops.	*
8. Weed Scientist	To deliver educational programs on weed management in agronomic crops.	*
9. Weed Scientist	To deliver educational programs on weed management in fruit crops and orchards.	*
10. Weed Scientist	To deliver educational programs on vegetable crops.	*
11. Weed Scientist	To deliver educational programs on noncropland vegetation management.	*
12. Soil Scientist	To conduct applied research and develop extension programs on fertility and effective application of fertilizer using innovative approaches in vegetable crops.	*
13. Soil Scientist	To conduct applied research to validate soil test recommendations in agronomic and vegetable crops.	*
14. Emerging and Alternative Crops Scientist	To provide applied research and educational programs for alternative crops to include canola.	*
15. Turfgrass Specialist	To provide educational programs for turfgrass management.	*
16. Information Transfer Specialist	To provide support of distance transfer of educational information and to maintain the Web Page for	*

agronomic crops.

III. Program: Ensure opportunities for protection of our natural resources.

17. Soil Organic Chemical Scientist	Scientist to establish a research program on soil-organic molecule Interactions, soil remediation and control of odor from use of production wastes.	*
18. Soil Quality Scientist	To conduct applied research and develop educational programs on the impacts of production waste applications and conservation tillage systems on soil quality.	*
19. Agroecologist	Scientist to conduct research on agroecosystem functions in relation to environmental quality.	*
20. Urban Landuse Scientist	To conduct applied research and develop educational programs on Urban landuse.	*

CAMPUS LOCATION FOR PROGRAMS:

Athens Campus

The Athens Campus will be the residence for the instructional programs. Although courses will be developed on Griffin and Tifton campuses and faculty at these campuses will participate in the course offerings to support the crop management degrees, the majority of the instruction will be home-based on the Athens campus. Distance learning opportunities will be developed. However, as we utilize distance learning for course offerings, it will be important to have standards equivalent to those that guide student learning on campus. The importance of the instruction program must be appreciated by all department faculty in order to increase student enrollment and improve the quality of education in the department.

Since the primary teaching program will be developed on the Athens campus, it will be necessary to situate the faculty hires to accommodate the instruction program. Additionally, the University, College, and Department has made a major investment in molecular genetics research programs. The predominance of that investment is on the Athens Campus with the ultimate dedication of the AGTECH building. Applied Genetic Technology is very expensive and I see no way that we can equip all three campuses with the necessary technology. Additionally, It will be necessary to maintain an adequate faculty at the Athens campus to instruct the crop management and ecology courses.

Although, plans should not be concerned with available space, it is important to place priorities on available space and expand programs as space becomes available. In the near future, I see no way that we can facilitate more than seven additional faculty on the Athens campus even with the plans for the AGTECH building. Therefore, I am proposing that the following number positions be located at the Athens campus: 1,2,3,4,6,17 and 19.

Griffin Campus

The Griffin campus has been identified for location of the Urban Agricultural Center and our department will continue to develop research and extension programs in turfgrass science and management. The Griffin campus location is fairly central to the state and can easily accommodate state wide extension programs. I am proposing that the Griffin campus be the home for the extension programs for forages, rights-of-way, and alternative crops. Therefore, I am proposing the following number positions be located at the Griffin Campus: 5,7,11,14,15,16, and 20.

Tifton Campus

The Tifton Campus will continue to house the extension/research positions that support production row crop agriculture. Therefore, I am proposing the following number positions be located at the Tifton Campus: 8,9,10,12,13,and18.

B. STAFF POSITIONS: That Have to be Filled Immediately:

Research Technician III - new position - \$24,851 -(base + 10%) - This position would be assigned to Dr. David Radcliffe, REI Coordinator. Dr. Radcliffe currently has a graduate student who will be graduating May 1999. This graduate student has been on a ½ time assistantship and has functioned as a technician for 6 six years. Dr. Radcliffe has not had a technician since 1992, with his REI responsibilities this position is critical to keeping his teaching and research program on track.

Reclassification of Mr. Don Day from **Senior Agricultural Specialist to Program Coordinator**. As per letter of July 20, 1998 (copy attached) verbally agreed to by Dr. Cherry and Dr. Issac.

Research Coordinator II - \$ 34,257 - Griffin - This would be a new position to replace Mr. Don Day. Funding for this position would come from the .52 EFT reassignment of Dr. Paul Raymer to Extension Agronomist

Agricultural Research Asst II - 284 CLRTC 17 - Plant Science Farm - \$20,906 (base + 10%) - This position has been vacant since Aug 98.

Farm Worker II - 284 CLRTC 15 - Plant Science Farm - reclassify this position to a **Agricultural Research Assistant II - \$ 20,906**. This position became vacant Dec. 98 with the retirement of Mr. Benny Craft.

Filling the two farm positions are very critical to the daily operation of the Plant Science Farm. At present we are down to 4 employees (one of which has physical limitations). As you are aware, it is virtually impossible to run a 522 acre farm with 3 people.

Administrative Secretary - Griffin - 316 CLRTC 18 - \$ 18,090 - This position has become vacant with the transfer of Ms. Kathy Berryman to the SANREM program at the Griffin campus. This position not only assists the REI Coordinator, but the Senior Accounting Assistant and Griffin faculty in the daily operation of the department.

Agricultural Research Asst II - 316 CLRTC 45 - (vacant) Griffin - reclassify to **Agricultural Research Asst III - \$ 24,851 (base +10%)** - This position works with the statewide variety testing program at the Tifton campus. If allowed to reclassify and fill, this position would be moved from Griffin (316) to Tifton (328).

Agricultural Research Asst III - 328 CLRMN 03 - \$ 22,592 (base) Tifton - This position is assigned to Dr. Craig Kvien - NESPAL - and will become vacant March 1 with the termination of Kim Franke. Dr. Kvien would like to fill position using grant dollars for the remainder of fiscal year then transfer to hard funds July 1.

Agricultural Research Coordinator I - 316 CLRMN 26 - \$ 25,561 Griffin - Position has become vacant due to the unfortunate death of Mr. Wayne Olson. Position is an integral part of the turf research program under the direction of Dr. Bob Carrow. .

¹ **AES**=Agricultural Experiment Stations.

² **CES**=Cooperative Extension Service.