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ABSTRACT

A 10-member task force reviewed the mission and goals of the University of Florida's graduate agricultural and natural resource academic programs, admissions procedures, number and types of graduate degrees granted, program capacity, student recruitment activities, teaching quality and methods, course offerings, support services, and international student services. The task force focused on degree programs, recruitment, and teaching. Data were collected from university records, faculty surveys, and student stipend information. Results were reported and suggestions for improvement were made in the areas of departmental programs, interdisciplinary programs, and service courses. Some of the concerns reported were as follows: graduate education should be future oriented; the faculty is divided into two groups (basic science and commodity-oriented agriculture); students are inhibited from taking courses outside their own departments; minors vary widely in requirements and student acceptance; interdisciplinary graduate programs would be useful; and quality is not sufficiently monitored in nondepartmental programs. Recommendations were made to address these concerns and improve programs. (Appendixes to the report provide statistical information on the graduate programs of the university.) (KC)

Academic Programs
Publication Series Number 12

Report of the Task Force on Graduate Curricula Development

College of Agriculture
Institute of Food and Agricultural Sciences
University of Florida
Gainesville, Florida 32611

January 1993

UNIVERSITY OF FLORIDA

EVALUATION OF GRADUATE EDUCATION

in the Institute of Food and Agricultural Sciences

University of Florida

REPORT
of the
GRADUATE CURRICULA DEVELOPMENT TASK FORCE

GRADUATE CURRICULA DEVELOPMENT TASK FORCE REPORT

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INTRODUCTION

Graduate education in the College of Agriculture began in the early 1900s. A Master of Science with a major in Entomology was awarded in 1908. The first Ph.D. was awarded in 1941 to an Animal Husbandry major. Over the years the diversity and size of graduate programs in the College of Agriculture have changed substantially. Six degree programs are currently offered through the College of Agriculture: 1) Master of Agriculture, 2) Master of Agricultural Management and Resource Development, 3) Master of Forest Resources and Conservation, 4) Master of Science (non-thesis), 5) Master of Science, and 6) Doctor of Philosophy. In the Fall Semester of 1991, 671 graduate students were enrolled in these programs. In addition, 37 students in Agricultural Engineering were registered through the College of Engineering, resulting in a total of 708 students enrolled in IFAS-funded programs.

Dean Larry J. Connor stated in his appointment of the Graduate Curricula Development Task Force that "It is appropriate at this time to initiate a college review of our graduate programs because of the budget situation, relationships between some of the graduate programs (in and out of the college), the need to assess where we have or potentially can achieve national prominence, interrelationships of the graduate programs to the Florida Agricultural Experiment Station's research programs, and possible considerations resulting from departmental mergers." The 10-member Task Force (Appendix A) was asked to review and make recommendations in the following areas:

1. Mission and goals of the University of Florida's graduate agricultural and natural resource academic programs.

2. Graduate School, college and department admission procedures.

3. The number and types of graduate degrees including: a) disciplinary M.S. and Ph.D. degrees (current and future), b) professional non-thesis M.S. degrees such as Master of Agriculture and Master of Agricultural Management and Resource Development, and c) disciplinary non-theses M.S. degrees.

4. The capacity of our degree programs for educating and training students for industry, research, teaching, and extension positions.

5. Graduate student recruitment activities of the college and departments.

6. Teaching quality/methods/rewards.

7. Service course offerings within the college and from other colleges.

8. Adequacy of graduate program support resources such as computers, labs, equipment, and travel.

9. International student special needs and services.

To examine these areas, the Task Force focused on degree programs, recruitment and teaching. Data were collected from many sources, including records in the Dean's Office on enrollment and degrees awarded, surveys of the Graduate Faculty and Graduate Coordinators in the Institute of Food and Agricultural Sciences (IFAS) and information on stipends supplied by The Graduate School. The survey of Graduate Faculty resulted in 202 usable

responses. The questionnaire and summary of results are presented in Appendix B and C, respectively. The response from the Graduate Faculty indicated that faculty have a strong interest in graduate education. The Task Force has met periodically since its formation to analyze the current situation and the problems in achieving and maintaining national prominence and excellence of our graduate programs.

Mission and Goals of IFAS Academic Graduate Programs

The overall mission of IFAS graduate programs is to achieve and maintain excellence in the education and training of professionals who will serve the Florida, U.S. and international communities in a wide variety of capacities relating to agriculture and natural resources. IFAS programs face the unique challenge of training individuals in applied commodity-oriented problems, state-of-the-art basic sciences and social sciences.

Specific goals of the IFAS graduate academic programs are:

1. To encourage and support excellence in teaching and research endeavors of the faculty and graduate students.

2. To encourage and develop student creativity, initiative, motivation and responsibility.

3. To prepare students with the technical expertise and intellectual skills necessary for the development of successful careers.

4. To provide consumers and producers new knowledge upon which future social and economic policy, agricultural production and natural resource management will be based.

Capacity For Graduate Training

The Institute of Food and Agricultural Sciences has a unique capacity for graduate education based upon faculty expertise, resources, student demand and public interest.

Faculty

National Research Council data show that over 35,000 doctoral degrees were conferred in 1990-91. The University of Florida awarded more than 330 that academic year, or roughly 1 percent of the total national output. The contribution of IFAS graduate programs to the total output of graduate degrees at the University was 8 percent of the master's degrees, and 14 percent of the doctoral degrees in 1990-91. The Graduate School has approximately 1700 Doctoral Research Faculty and 900 Graduate Studies Faculty, and more than 20 percent from each group are members of IFAS units. IFAS extension and research faculty at Centers throughout the state provide valuable and unique training opportunities, but usually large numbers of graduate students are not involved. Because of the location of government agencies and laboratories in Gainesville, more of the IFAS graduate faculty are courtesy members of departments as compared to other divisions of the university. These practices are viewed as a benefit to graduate education and contribute to the capacity to educate, but they do lower the relative student output per graduate faculty ratio.

Resources

Over the years, IFAS, through departmental research budgets, has provided a significant number of graduate assistant stipends and contributed substantially to the graduate education mission. IFAS is comprised of a diversity of disciplines, with markedly different potentials for obtaining graduate student support. Consequently, the capacity to train and educate is augmented by these stipends, which have been in relatively constant supply until

recent years. This institutional comm ..ent is rare in higher education with the possible exception of the agricultural component of land grant unive..ities; stewardship of these limited funds needs to be carefully monitored to provide maximum benefit. At the pres..t time, IFAS intramural resources provide approximately 125 of the 380 stipends available to graduate students in IFAS programs. Budgetary constraints have caused a high proportion of stipends to be funded from extramural sources. Graduate advisers must ensure that research from extramural funds is appropriate for graduate education.

Infrastructure ontributes to the quality of graduate programs. While IFAS has had to exercise fiscal restraint in recent years, there are still many positive components of infrastructure to mention. Many new buildings have been completed, 12-month faculty appointments are still the norm, thus providing year-round graduate mentorship, and departments have support staff for many duties that impact on the graduate learning experience.

Student Demand and Scope of IFAS Graduate Programs

Ties between IFAS graduate programs and the extramural community are strong, and graduate degree recipients are in demand. Today's rapid advances in basic science and technology are opening new possibilities for graduate programs which can change contemporary training needs. For example, as the result of changes in science and technology, many research programs of individual faculty members are markedly different today than they were in years past. Therefore, if IFAS is to capitalize on new opportunities for graduate education but with limited resources, some change in the current menu of disciplines comprising IFAS graduate programs may be needed. For that reason, it is advisable to re-evaluate existing graduate education programs and to make recommendations for future graduate programs on a regular 10-year basis. This analysis would be separate from the mandated departmental reviews, which do not provide the intra-institutional comparisons needed for graduate program initiation, alteration or termination.

ACADEMIC PROGRAMS: EVALUATION, IMPROVEMENT AND DEVELOPMENT

The evaluation of academic programs plus recommendations for improvement and development are divided into three areas: (1) departmental programs, (2) interdisciplinary programs (including interdepartmental programs that may be disciplinary in nature), and (3) service courses. In developing the following lists of strengths, concerns and recommendations, the Task Force relied heavily upon the faculty survey (Appendix B), interviews with the Graduate Coordinators, and conversations with faculty and students. Although a large number of concerns and suggestions were expressed verbally or in writing by the faculty and Graduate Coordinators, some clear patterns and consistencies emerged.

The research agendas of federal agencies, including the National Science Foundation, National Institutes of Health, and United States Department of Agriculture, are currently in a state of re-examination to ensure that they contribute to national development and the quality of life through effective programs. An impetus for this has been the recent, seemingly endless stream of scientific advances and the practical application of these advances and their impact on the fund of human knowledge, as well as on the economics that drive the system.

As a result, graduate programs that were appropriate in the past may no longer be as relevant. Therefore, as research agendas undergo re-examination, so should the graduate education enterprise.

Departmental Programs

Many departments in IFAS are organized according to commodity groups to facilitate programmatic administration in research and extension. This structure clearly serves some missions and goals of IFAS for the state of Florida. A significant number of our domestic students and a large number of our foreign graduate students

are interested in graduate education that will provide access to applied specialty or commodity areas both here and abroad. However, training graduate students (particularly Ph.D. students) to work primarily with a particular commodity is often not in the best interests of the students, both in terms of academic development and future job opportunities. Therefore, a careful balance of the scientific approach to applied problems and contemporary foundation course work have been hallmarks of successful departmental graduate programs. Most IFAS graduate students are enrolled in departmental graduate programs. This demonstrates the interest some students have in specific departmental graduate programs. It should be emphasized that some departmental graduate programs are not commodity oriented.

Concern No. 1: Graduate education must be directed toward the future, where students of today will provide new ideas and innovations. An analysis of existing IFAS graduate programs may reveal that changes are necessary to provide contemporary programs for our students and to ensure proper stewardship of the graduate education enterprise.

Recommendation No. 1: Departmental graduate faculty should continue to evaluate existing programs on a regular basis to consider if some should be terminated or reoriented, or should receive expanded attention.

Concern No. 2: The prevailing commodity-oriented departmental structure of graduate programs appears to have contributed also to a significant, and very serious, dichotomy between two groups of faculty: the more basic science, laboratory-oriented faculty and the more traditional, commodity-oriented agricultural scientists who work directly on more applied problems. These two groups appear to be somewhat entrenched into opposite "camps" with some mutual animosity. Many graduate students are caught in the middle of these professional conflicts and misunderstandings. As a result, conflicts arise within departments and potentially within supervisory committees regarding course requirements, qualifying examinations, and thesis/dissertation defenses. Furthermore, the current departmental structure and associated degree programs within IFAS may inhibit recruitment and training of some graduate students in biological disciplines that form the foundation of the agricultural and natural resource sciences.

Recommendation 2a: Develop multiple graduate tracks or concentration areas within a departmental program that students can follow. Departmental graduate faculty should support all tracks (areas), but may not elect to participate in all tracks.

Recommendation 2b: Another possible solution to these conflicts would be the existence of interdepartmental graduate degree programs. (This is discussed in the next section.)

Concern 3: Many departments within IFAS require (either formally or informally) that their graduate students take significant numbers of courses within their own department, thus inhibiting students from taking courses outside the department. Many faculty members believe that such requirements are primarily serving the interests of the department and not necessarily those of the students. Specialized courses outside the department that are directly related to the students' discipline of study (such as BCH 6415: Advanced Molecular and Cell Biology) may be acceptable for major credit where appropriate.

Recommendation 3: Departments within IFAS should identify and promote areas of specialization and generalization within each degree program. Equal opportunities should exist within each department for students to be trained in both the "basic" and "applied" sciences. Departments and faculty should not be placed in a position where they feel compelled to fill their courses for fear that the program will be viewed in a poor light by program evaluators or administration.

Concern 4: There are several organized non-departmental minors, specializations and certificates in IFAS which vary widely in requirements and student acceptance.

Recommendation 4: The Dean for Academic Programs should appoint a study group to consider all these programs (such as Tropical Agriculture, Pest Management, Farming Systems and Agroforestry) and recommend future status (continue, discontinue, upgrade to interdisciplinary major or minor).

Interdepartmental or Interdisciplinary Programs

In some areas, interdiscipinary programs could be used to strengthen and supplement departmental programs. This mechanism can provide the flexibility needed to meet changes in the interest of students and take advantage of scientific advances. This places the burden of program focus, quality and mentorship in the hands of those faculty most associated with a given field or discipline. At many other institutions, the use of interdisciplinary graduate groups has been viewed as a mechanism to strengthen graduate programs. In this context, the University of California-Davis could serve as a model for the University of Florida. Roughly half of the programs at UC-Davis are administered in interdisciplinary or disciplinary group modes that, in some cases, even transcend college governance.

Concern 5: The spectrum of faculty research interest in IFAS merges well with development of interdisciplinary graduate programs. Considering the pace of science, departmentally-based graduate programs may not provide the best approach for IFAS in the future. Specifically, for the purposes of IFAS graduate education, a combination of programs based in departments and those developed around faculty groups that cut across departmental lines (both disciplinary and interdisciplinary) would probably be more appropriate.

Recommendation 5: A faculty/administration study group or task force should be formed to make recommendations on interdisciplinary graduate programs for IFAS missions in the agricultural and natural resource sciences. The opinions of individuals from a few other select institutions need to be obtained as part of that analysis. At Florida, the Plant Molecular and Cellular Biology graduate degree program serves as a prototype for the interdisciplinary graduate group approach. It is an interdepartmental graduate program, and was generated to meet the demands of contemporary science and career goals of students. This approach to graduate program governance increases the likelihood that the faculty nucleus will be generated to support proposals for focused extramural funding, which now is common practice at other institutions. A major impact on recruiting would be expected to occur as these programs mature. Suggested graduate groups or programs include Animal Physiology, Genetics, Nutritional Science, Plant Physiology, and others deemed necessary or important to the overall graduate education mission of IFAS. The administration should be prepared to provide some modest support to new interdisciplinary programs for assistantships, student travel to scientific meetings, recruiting seminar programs and part-time secretarial help. Grant overhead dollars generated by the program faculty could support some of the program activities.

Concern 6: Frequently, natural liaisons exist among departments that could be developed into areas for graduate education. These areas of graduate specialization would be more informal than the interdisciplinary (interdepartmental) graduate programs described in the section above. However, current departmental structures could inhibit recruitment of graduate students in a mutual focus area of this type. Barriers to such faculty interactions include the departmentally-driven need to obtain the most favorable number of FTEs for faculty and support staff. In addition, departments desire to obtain credit for extramural graduate student support generated by departmental faculty.

Recommendation 6: Where there are appropriate faculty in two or more departments to develop an interdepartmental area of specialization for graduate training and a clear need, this interaction should be encouraged. Administration should reduce barriers that would penalize departments and/or faculty for such efforts.

Concern 7: Concern has been raised by some faculty and administrators at the University of Florida that, when graduate programs are not in departments, quality is not sufficiently monitored. Many excellent institutions have well respected nondepartmental graduate training programs which shows that this concern is not founded.

Recommendation 7: To ensure quality, the interdisciplinary (graduate group) approach to graduate programs requires active faculty participation, where enumerated by-laws and procedures are followed, such as those made a part of the Plant Molecular and Cellular Biology program. The Office of the Dean for Academic Programs should require that by-laws and procedures be developed to govern proposed interdisciplinary programs that cut across departmental lines.

Service Courses

Service courses for IFAS graduate students might be classified as (1) techniques/methods courses or (2) subject-matter courses. Within each category, there may be courses that are either (1) intradepartmental, (2) interdepartmental within IFAS or (3) interdepartmental outside of IFAS. In many cases, it is difficult to determine if a particular course should be considered as a service course.

The question of the adequacy of service courses for IFAS graduate students should be examined within the larger context of the evaluation and improvement of particular academic programs. One respondent to the survey of IFAS graduate faculty suggested that in a given discipline area "departments collectively and simultaneously evaluate, reorganize and consolidate courses needed and appropriate for that discipline." Service courses should be examined within the context of evaluation and improvement of academic programs.

The survey of IFAS graduate faculty identified a number of specific concerns about service courses; the following summarizes these concerns and our recommendations:

Concern 8: Current offerings in biochemistry do not fully meet the needs of graduate students in IFAS. A one-semester survey course is needed by students in many departments. The undergraduate, premedical biochemistry course is offered only once per year and does not address key plant processes, such as photosynthesis and nitrogen fixation. The large class size (approximately 500 students in Fall of 1992) does not provide an optimal learning environment for graduate students. Many faculty have expressed the need for a course with an expanded scope, a smaller size and one that was more readily available to graduate students.

Recommendation 8: The Office of the Dean for Academic Programs should work with the Biochemistry and Molecular Biology Department to develop a rigorous one-semester biochemistry course suitable for beginning graduate students in the life sciences. This course should emphasize the basic properties of biomolecules and the key metabolic pathways of plant, animal and microbial systems. The course should include expanding the scope of the existing course, increasing its availability to students and decreasing the size of the lecture section. If that route proves unsuccessful, IFAS should consider offering a course through an IFAS department.

Concern 9: Current offerings in plant and animal physiology may be inadequate for IFAS graduate students.

Recommendation 9: The Office of the Dean for Academic Programs should form interdepartmental groups of plant and animal scientists to consider revisions of current offerings and/or develop new courses as needed.

Concern 10: Beginning graduate students may not have a strong background in basic research techniques (experimental design, data collection, analysis, interpretation, and publication), and often do not have a concept of the basis and philosophy of science and the scientific method. Many departments do not offer this training.

Recommendation 10: The Office of the Dean for Academic Programs should encourage faculty to provide graduate training in scientific methods, hypothesis development and testing, the philosophy of research and ethics.

Concern 11: Scheduling conflicts in the two-semester system frequently makes it difficult to schedule some courses in proper sequence or take prerequisites (a problem not limited to service courses and graduate programs).

Recommendation 11: The Office of the Dean for Academic Programs should investigate the feasibility of a modular scheduling system which would permit more than two courses to be taken in sequence in a two-semester academic year, such as six- to eight-week sessions for which titles can be specified on the transcript.

GRADUATE STUDENT ISSUES

Recruitment

T departments vary greatly in their recruiting activities for graduate students. A survey of approximately one-half of the IFAS Graduate Coordinators was conducted to determine the extent of graduate student recruiting practices and problems involved in attracting potential graduate students to IFAS programs. Approximately one-third of the departments conduct extensive mailings of advertising literature while the remaining departments solicit students primarily through faculty contacts. One-half of the departments have assembled brochures which describe research activities and graduate training as a recruiting tool and one-third advertise in the Peterson's Guide to Graduate Programs. The level of funds provided for graduate research stipends and the lack of fringe benefit packages such as medical insurance and tuition are regarded as primary barriers in recruiting the most-talented graduate student applicants.

A further problem in recruiting the most-talented students lies in the general perception of agriculture. Additional efforts are needed to emphasize important new contributions and research programs which serve current societal needs. The success of our graduate students elsewhere serves as one of the most important factors influencing the academic perception of UF programs. We need to recruit the very best students and to work with them to maximize their potential. Although the quality of applicants for most graduate programs was viewed as adequate to good by graduate coordinators, further improvement in the numbers of outstanding U.S. applicants would be helpful for most departments. Special efforts continue to be needed to increase the enrollment of minority graduate students.

Concern 12: The applicant pool for graduate positions in many departments could be improved through increased advertisement.

Recommendation 12a: All departments should have current summaries of research activities which advertise programs to prospective students and faculty in other schools.

Recommendation 12b: To the extent feasible, departments should develop small posters and joint brochures which could be mailed to outside institutions. Small posters (9 1/2 by 11 inches) with self-addressed post cards represent a cost-effective means of advertising and can encourage student interest in programs if followed up by brochures describing research and training opportunities. These efforts should become a fiscal priority for departments.

Recommendation 12c: IFAS should make available to high school and community college teachers trained by the Interdisciplinary Center for Biotechnology Research (ICBR) information about student research opportunities in recombinant DNA research within agriculture and natural resources. IFAS faculty should continue to participate where appropriate. With the aid of an IFAS recruiter, some of these individuals could serve as contacts to publicize positive aspects of our graduate programs and as a future source of graduate students.

Recommendation 12d: Because Florida lacks the base of outstanding colleges and universities present in many states which serves as a source of graduate applicants, recruiting trips may be needed to develop contacts in other states. Individual departments could target two or three schools by visiting and presenting seminars each year. If appropriate advertising materials are developed, departmental representatives could also provide general information concerning other IFAS programs. This could be coordinated through a recruiter familiar with our research

programs and faculty expertise.

Concern 13: Neither the assistantship levels provided for graduate students nor the fringe benefits offered is competitive in many cases with outstanding programs elsewhere. The future success of graduate students offers one of the best opportunities to improve the academic recognition of our graduate programs.

Recommendation 13: Graduate assistantships and other benefits should be provided at a level competitive with other universities. The stipend levels for graduate students are under departmental control. To improve the quality of students, it may be necessary to decrease the numbers supported solely from state funds. Although state support increases may be unlikely, requests from granting agencies should be made at levels which provide competitive recruitment. (See also Recommendation 18.)

Concern 14: Many excellent students at the University of Florida have not been adequately exposed to the academic and research opportunities in agriculture and natural resources as they formulate career goals.

Recommendation 14: Competitive Research Fellowship programs should be developed in individual departments or in groups of departments. These should be provided to undergraduate students in their third year of study with a stipend of $1,000 per semester (or summer) and the opportunity to continue during the senior year. By making these competitive and soliciting applications in the spring of the preceding year, departments should be able to identify some of the most talented students and expose them to new opportunities.

In some cases, these students may enter graduate programs in Florida. Others may choose graduate programs elsewhere. By identifying these students, departments will have an opportunity to help place excellent students. Success of our students in outside programs could become an important component to improve our academic standing.

Departments should promote these undergraduate fellowship programs providing a further opportunity to enhance the positive aspects of IFAS research on campus. Some variation could be incorporated into recruitment from other schools through the above visitation and ICBR-related activities to provide summer projects. The opportunity to place students in summer programs at the University of Florida would provide strong motivation for our outside contacts.

Graduate Admission Application Procedures

Efforts by departments, the College and/or the Graduate School to recruit top-quality graduate students must be accompanied by timely and effective processing of applications for graduate admission. At the University of Florida, this process involves the Registrar's Office, the College Dean, Departments, and the Graduate School; inefficiency or delays at any point of the process can reduce the effectiveness of recruitment. The questionnaire submitted to the Graduate Faculty contained a question about admission procedures (Are you satisfied with the graduate admission procedures for your department?). A high percentage of respondents answered affirmatively; faculty at Research and Education Centers were slightly less satisfied with the admission procedures than those on main campus.

Applications for graduate admission are submitted directly to the Office of the Registrar. The applications are handled there by two different offices; Graduate Admissions processes applications from persons who are not and have never been enrolled officially at the University of Florida; Re-Admissions processes applications for current or former University of Florida students. Detailed information concerning the applications of new U.S. and international students is available on screens #006 and 007 of the Student Records System. The Current Student Record screen (#021) provides test score and GPA data and other information for current and former students. The processing of applications for graduate admission is as follows:

1) The "departmental copies" of the applications are sent by the Registrar's Office to the office of the appropriate College Dean. A copy is made for the college file and the original is sent to the appropriate department.

2) As soon as an applicant's file is complete (transcripts, test scores, and application fee), a "referral" is forwarded by the Registrar's Office to the College Dean. A copy of the referral is made and sent with the transcripts and a cover memo to the departmental Graduate Coordinator for action. Upon receipt of a departmental recommendation, the College Dean signs the original of the referral and distributes copies to the applicant, the Registrar's Office, the Graduate School, and the applicant's department or program.

3) The minimum direct admission criteria are an upper division undergraduate grade point average (UGPA) $\geq$ 3.00, a GRE-V + GRE-Q score $\geq$ 1,000, and a TOEFL score (if required) $\geq$ 550. Applications must go to the Graduate School for the Graduate Dean's approval if 1) the TOEFL score is less than 550, 2) the UGPA is lower than 2.7, 3) the GRE-V + GRE-Q score is less than 950, and 4) in cases in which both the UGPA and GRE score are below the minimum criteria. The letter to the Graduate School is written by the departmental Graduate Coordinator or the faculty member with whom the applicant will work.

4) The School of Forest Resources and Conservation handles the applications (and maintains the student records) for all applicants interested in Forestry, Wildlife & Range Sciences, and Fisheries & Aquaculture. The applications for admission in Agricultural Engineering are processed through the College of Engineering, although those for Agricultural Operations Management (AOM) are handled by the College of Agriculture.

5) The applicant's copy of the admission notice for international students is sent directly to the International Student Center. Each international student must document an availability of $19,005/year before he/she can be sent an I-20 with which to obtain an F-1 visa from the American Consulate in his/her country.

Concern 15: Although most applications are handled properly by all concerned, some are delayed in the approval process.

Recommendation 15: Departments (faculty and Graduate Coordinators) should maintain contact with each applicant and with the Registrar's Office, College Dean's Office and/or the Graduate School if referrals are delayed beyond a reasonable time after the application is submitted.

Concern 16: A review of recent graduate admission data for the College of Agriculture indicates that a significantly higher number of potential graduate students are admitted than actually enroll. While many factors affect this situation, there is concern that some of the best applicants are accepting admission elsewhere.

Recommendation 16: Graduate Coordinators and other departmental faculty must maintain close contact with prospective students, especially after the decision to admit has been made. A computer program for tracking potential students should be developed or purchased and made available to all Graduate Coordinators. It remains the responsibility of the department or program to identify excellent applicants early and to agressively monitor the decision process.

Concern 17: The application process (particularly financial support) can be daunting for international students.

Recommendation 17: Efforts by the Graduate Coordinator and the College Dean's office should be directed toward making the admission process less traumatic. Applicants should be provided complete information regarding

requirements and procedures. Of special concern is coordination with the International Student Center relative to the documentation being on hand to permit generation of the I-20.

Graduate Program Support

In the Spring Semester, 1992, there were 677 graduate students enrolled in graduate programs in the College of Agriculture. About 56 percent (380) of these students were on assistantships, 4 percent (27) were on fellowships, and slightly over 4 percent (30) were University of Florida employees with free tuition waivers. Two-hundred-thirty-nine students (about 35 percent) had no identifiable financial aid. About 68 percent of the assistantships were funded from contracts and grants.

The 1/3-time assistantship is the predominant type in the College of Agriculture, although about 29 percent of the assistantships are 1/2-time. The average 1/3-time assistantship provides $8,470 for Master's students and $9,804 for Ph.D. students. The average 1/2-time assistantship pays $11,049 for Master's students and $12,008 for Ph.D. students.

The survey of graduate faculty by the Graduate Curricula Development Task Force indicated that inadequate funds for assistantships and low stipend rates were major problems in attracting or recruiting graduate students to their research programs.

In listing reasons for their answer to "Have you had difficulty attracting or recruiting graduate students for your research program?", 57 percent of the respondents indicated that funding problems (such as, no funds, inadequate funds or low stipend rates) made it difficult to recruit graduate students to their research program. In response to the question, "In your opinion, what kind of action should be taken to improve the quality and competitiveness of graduate programs and research associated with IFAS and the University of Florida?", many respondents listed structural program changes but 49 percent of the respondents indicated that increased funding is needed to improve the quality and competitiveness of IFAS graduate programs. The suggestions included more money for assistantships, raising stipend rates to be more competitive, additional fee waivers, computing equipment to meet student needs, better offices for graduate students, improved space and equipment support, health insurance and funds for graduate teaching program.

Therefore, the Task Force strongly urges that structural changes are made in the budgeting process to allow a greater portion of the resources available to go to graduate assistantships. Two broad options are available. They are: (1) Off-the-top funding by the respective deans earmarking an increased portion of the resources for assistantships. This will obviously result in a decreased allocation to some other area; (2) the flexibility of lump sum funding available at the unit administrator level. This will allow those units who have made a serious commitment and have designated graduate student support as a high priority to redirect salary savings from vacant USPS technical positions to graduate assistantships and other graduate student support. Clearly, the budget would need to be stable and excess commitment of resources brought into balance with programs so unit administrators, as part of the annual budget process, could plan to use this opportunity. It may take one or two years for this transition to occur. The following concerns and recommendations are based on this latter approach.

Concern 18: Assistantship offers from IFAS Departments are often not competitive with other top universities and it is difficult to attract the most talented graduate students.

Recommendation 18: IFAS Departments should study the stipend rates being offered by competing departments at top-rated universities in their disciplines and adjust their stipend rates to be more competitive in attracting the best qualified applicants.

Concern 19: State support for funding graduate assistantships is inadequate. Only about one-third of the

assistantships were funded from state sources during the Spring, 1992.

Recommendation 19: IFAS administration and departmental faculty need to designate graduate education as a priority and should designate additional funds for assistantships and/or fellowships. More assistantships are needed to recruit top graduate students into the graduate research programs. In many cases, additional state funds are needed to get students started before they are funded through grant sources and to support them between the time one grant expires and another grant begins.

Concern 20: According to the survey of the Graduate Faculty, there is significant concern about the availability of fee waivers; the uncertainty of their availability is believed by the faculty to cause problems in recruiting.

Recommendation 20: It is essential to be able to commit fee waivers when recruiting graduate students. Faculty should be made aware that students on an assistantship of .25 FTE or higher for an entire term will receive a fee waiver. The problem lies in the fact that, if IFAS' allocation is inadequate to cover the waivers for a particular fiscal year (and unused waivers are not available from other UF administrative units), the deficit must be paid from non-state funds. It is recommended that IFAS central administration accept the responsibility of covering any fee waiver deficit that might occur rather than passing it on to departmental units.

Concern 21: The computing and other equipment available for graduate students to do their research varies considerably and is inadequate or out-dated in some cases.

Recommendation 21: Departments should designate additional funds for computing and other equipment to support graduate student programs.

Concern 22: Office space for graduate students on assistantships is inadequate in many cases. It is difficult for graduate students to perform their research when they may be sharing a desk with other graduate students.

Recommendation 22: Departments should survey their assigned space, designate adequate and acceptable office space for graduate students where possible, and request additional space if necessary.

Concern 23: Other universities offer some type of health insurance coverage for graduate students. It is difficult to compete against these universities when we do not offer a health insurance program.

Recommendation 23: The Office of Academic Programs should work with the Graduate School and other University officials to develop a group health insurance package which can be offered to Graduate Assistants and Fellows. This package should also include post-doctoral associates. Provisions should be made to allow the college, department, the student or some combination of these groups to pay for this insurance.

International Students

The University of Florida has a unique advantage for attracting international students interested in agriculture and natural resources. This advantage comes from past heavy involvement in international agriculture development activities and a commonality of Florida agricultural problems with tropical developing countries. International students currently represent 34.5 percent of IFAS graduate students. The percentage of international students varies among IFAS Graduate programs and ranges from 11.8 in Agricultural Education and Communications to 59.3 in Plant Pathology. The IFAS percentage of international students compares to a University range of one percent in Health Related Professions to 54 percent in Pharmacy.

Two primary administrative offices dealing with international activities and graduate students within the University of Florida have at least a partial focus on graduate education. These offices are: IFAS International

Programs Office (Director Hugh Popenoe) and the University of Florida Office of International Studies and Programs (Dr. Uma Lele, Director, and Dr. Richard Downie, Associate Director). In developing the material for this section, personnel from both offices as well as some of the IFAS departmental graduate coordinators were interviewed.

Concern 24: International graduate students face dramatic social and academic adjustment difficulties. Non-student spouses of international students are often socially isolated by language and culture.

Recommendation 24: The college should investigate the need for developing a first-semester orientation program that would supplement the orientation offered by the International Student Center; it could include special emphasis on problems unique to international students such as finances, insurance, banking, automobiles, drivers licenses, employment and language. Such a program should include a mentoring component with an established student. A package of this type of information should be provided to all IFAS Graduate Coordinators.

Concern 25: International students often desire broad scope training in "practical problem-oriented production agriculture", some IFAS programs are fundamental scier · oriented and are inappropriate for students with more production-oriented goals.

Recommendation 25: Individual departments should carefully monitor graduate committees and programs of study to ensure that international students are matched with appropriate faculty. International students should be encouraged to train with faculty whose programs match closely the student's goals.

Concern 26: Many international students rapidly move into administrative positions when they return to their countries and may need training in management and administration.

Recommendation 26: A one hour seminar course on the Land Grant Model of Agricultural Teaching, Research, and Extension should be developed and offered for all students.

Concern 27: For students who conduct research overseas, a non-University of Florida faculty member often has a major role in guiding the student's graduate program, but it is difficult to appoint such individuals to committees and for these persons to attend the exams.

Recommendation 27: Submit a proposal to the Graduate Council to allow appointment of a committee member away from University of Florida who is not required to attend the oral exams but would participate in written qualifying exams and review of the thesis/dissertation and be allowed to sign the thesis/dissertation. Such a member would serve in addition to the presently-required number of committee members.

TEACHING ISSUES

Evaluating Quality of Teaching

Consistent with the University mission is the UF/IFAS graduate program mission to educate and train professionals to serve Florida, U.S. and international communities in a wide variety of professions relating to agriculture and natural resources. The college provides a graduate curriculum consisting of a variety of general education, pre-professional and advanced courses. The quality of these courses can be measured by a combination of processes including student evaluations of teaching and faculty peer review of teaching. Other means of evaluation include achievement scores of professional tests (engineering exam) and scores on standardized tests (such as LSAT and GRE). Quality of education can also be evaluated by surveying graduates after graduation.

Regardless of the university mission statement purporting objectives for excellence in teaching, research and service, sentiment abounds that faculty rewards are primarily for performance in research. It is alleged that the evaluation of research productivity is much easier, more reliable, and more valid than teaching evaluation. Criteria for research evaluation seem more objective. Authorship of books, book chapters, referred journal articles, monographs, abstracts, citations, non-referred articles, paper presentations, grant awards, and graduate student direction are obvious measures utilized. Teaching quality, on the other hand, often is measured by student evaluations, class enrollments and subjective opinion of the unit administrator.

It has been proposed that teaching can be measured as rigorously as research. Administrator classroom visits, peer review of classroom performances and teaching materials, alumni opinion, and self evaluation could/should all be components of measuring teaching quality. When an instructional assessment program includes such components as a well-defined and organized system of peer evaluation, the use of a reliable and valid student course and instructor rating system, and an evaluation of the quality of an instructor's teaching materials, teaching can be just as fairly evaluated as research.

Concern 28: Methods currently used to evaluate teaching quality are inadequate in comparison to research quality review.

Recommendations 28a: The Task Force recommends that the college consider a more extensive peer evaluation program for teaching.

Recommendation 28b: The Task Force recommends that the college develop an alumni interview and locator data base. Graduates would be expected to provide exit interviews at graduation and be sent follow-up questionnaires at the end of 5 years post graduation.

Teaching Methodology

Reviews and reports from other land grant institutions indicate that most teaching faculty have little or no formal training in learning theory or effective teaching. Any understanding of the learning process tends to be intuitive. The reports state that professors tend to emulate teaching styles to which they were exposed as graduate students, thus perpetuating ineffective instructional methodology. It is also pointed out that few graduate school curricula include courses concerning pedagogical creativity and effective teaching.

Concern 29: While the College of Agriculture has numerous dedicated and innovative teaching professors, there are serious deficits in programs designed to enhance the ability of faculty and graduate students who want to improve their pedagogical expertise.

Recommendation 29a: It is recommended that the college initiate a Teaching Methodology service course for all graduate students.

Recommendation 29b: It is recommended that the college develop and provide newly-hired faculty a well-organized orientation program emphasizing teaching methodology, advising and availability of institutional teaching support.

Recommendation 29c: It is recommended that the college initiate a continuing series of faculty workshops and seminars designed to incorporate all aspects of effective, innovative teaching. Faculty should attend these on a specified basis.

Rewards for Teaching

Regardless of whether it is true or unsubstantiated, the perception exists that this college and the university rewards faculty primarily for their performance in research. It is felt that teaching, especially undergraduate teaching, is often neglected so the faculty can be more fully engaged in research. Outstanding productivity in teaching should be rewarded as research is rewarded, with pay raises. While teaching and advisement awards do recognize special contributions of individuals, they cannot recognize all faculty who are outstanding teachers.

Many institutions have provided for advancement beyond the professorial rank in cases where performance merits special recognition. The University of Florida currently has ranks for Graduate Research Professor (GRP) and Distinguished Service Professor (DSP). The criteria for both ranks include teaching. The promotion guidelines state that the GRP recognizes outstanding accomplishment and international reputation in teaching and research; the DSP recognizes truly outstanding accomplishment in teaching (undergraduates and graduates) or service while at the university. The DSP traditionally has been awarded to individuals with long records of service.

Concern 30: There is a general feeling among faculty that teaching excellence does not receive the recognition and rewards comparable to that in research.

Recommendation 30a: The Task Force recommends that administration acknowledge that innovative teaching takes time. Associated with this, faculty should be encouraged to attend workshops, prepare curriculum and renew courses.

Recommendation 30b: While teaching and advisement awards are appropriate, the Task Force recommends that administration develop a system for applying merit awards for teaching to the faculty member's base salary.

Recommendation 30c: The Task Force recommends that administration take a more aggressive attitude in promoting deserving faculty either to the Distinguished Service Professor rank or by creating a new University Teaching Professor rank.

APPENDIX A

TASK FORCE MEMBERSHIP

Donald E. Campton, Jr., Associate Professor, Fisheries and Aquaculture Department

Christine D. Chase, Associate Professor, Horticultural Science Department

Robert J. Cousins, Boston Family Professor of Human Nutrition, Food Science and Human Nutrition Department

Everett R. Emino, Professor and Assistant Dean for Research

Jack L. Fry, Professor and Assistant Dean for Academic Programs

Lonnie O. Ingram, Professor, Microbiology and Cell Science Department

John E. Moore, Professor, Animal Science Department

Kenneth H. Quesenberry, Professor and Graduate Coordinator, Agronomy Department

John E. Reynolds, Professor, Food and Resource Economics Department, Task Force Chair

John R. Strayer, Professor and Graduate Coordinator, Entomology and Nematology Department

APPENDIX B
IFAS GRADUATE CURRICULA TASK FORCE, FACULTY QUESTIONNAIRE

(Please return by April 1 to: Jack Fry, 2001 McCarty, CAMPUS)

==========

Current rank:_____

No. years at U.F._____

Work location (circle one): on-campus

off-campus research center

Departmental affiliation (optional):_____

==========

1. How many graduate students are currently working/studying under your direct supervision? (i.e. for which you serve as chairperson of the supervisory committee)

   1a) Number of Master's students? 1a._____

   1b) Number of Ph.D. students? 1b._____

2. How many graduate students total, including those listed in (1), have you supervised in the past 5 years?

   2a) Number of Master's students? 2a._____

   2b) How many Ph.D. students? 2b._____

3. During the past five years, how valuable have graduate students been to your overall program productivity?
(circle one)

Highly valuable	**Very valuable**	**Moderately valuable**	**Not very valuable**	
				3._____

Not applicable (N/A)
(no graduate students)

4. In the past 5 years, how many reviewed publications have graduate students in your program served as

   4a) first author? 4a._____

   4b) coauthor? 4b._____

5. Do you believe that your research program has suffered or been inhibited because of a shortage of graduate students with respect to (yes or no for each part)

   5a) quality? 5a._____

   5b) quantity? 5b._____

6. Have you had difficulty attracting or recruiting graduate students for your research program?
(yes or no) 6._____

7. In your opinion, what are the reasons for your answer in #6 on preceding page? (Give a brief narrative; use the backside if necessary).

8. Are you satisfied with the graduate student admission procedures for your department? (yes or no) 8._____

9. What are the primary reasons for your answer in #8 above? (Give a brief narrative).

10. Are the formal course needs of your graduate students being met by the breadth of courses currently taught at the University of Florida? (yes or no) 10._____

11. If your answer to #10 above was "no," what new courses need to be taught, or old courses reorganized, to satisfy the needs of your students?

12. What do you feel is an appropriate amount of teaching experience for a Ph.D. student to obtain (circle one, or more if applicable):

a) Not necessary

b) Assist with preparation of course materials

c) Lab or section T.A.; suggested number of semesters:_____

d) Occasional guest or substitute lecturer

e) Full responsibility for a lecture course

13. Are your Ph.D. students obtaining the teaching experience indicated by your answer in #12?

(yes, no, or N/A) 13._____

14. How many of your former Master's students (last 5 years)

- 14a) found employment in their field after graduation? 14a._____
- 14b) found employment after graduation, but not in their field? 14b._____
- 14c) continued graduate studies for a Ph.D., either at U.F. or elsewhere? 14c._____
- 14d) returned to graduate studies for a Ph.D. after one or more years of employment? 14d._____
- 14e) withdrew from U.F. without graduating? 14e._____

15. How many of your former Ph.D. students

- 15a) found employment as a faculty member of a college or university, with or without postdoctoral experience? 15a._____
- 15b) found professional employment (non-faculty) in their field, with or without postdoctoral experience? 15b._____
- 15c) found post-doc employment only? 15c._____
- 15d) found employment, but not in their field? 15d._____
- 15e) withdrew from U.F. without graduating? 15e._____

16. Do you believe that the current departmental structures and associated graduate programs adequately serve the education and training needs of (yes or no)

- 16a) your Master's students? 16a._____
- 16b) your Ph.D. students? 16b._____
- 16c) all Master's students in IFAS? 16c._____
- 16d) all Ph.D. students in IFAS? 16d._____

17. Do you believe that reorganization and/or consolidation of some existing departments in IFAS would facilitate or improve graduate training (yes or no) 17._____

18. If your answer to 17 is "yes," what are your specific suggestions?

19. In general, do you favor the development of interdepartmental, discipline-oriented graduate degree programs (e.g genetics, animal physiology, plant physiology, etc.)? (yes or no) 19._____

20. If your answer to 19 was "yes," what interdepartmental graduate degree programs do you believe are needed to improve recruitment and training of graduate students in IFAS?

21. In your opinion, what kind of actions should be taken to improve the quality and competitiveness of graduate programs and research associated with IFAS and the University of Florida? What other institutions do you believe would serve as good models for IFAS and U.F. to follow with respect to improving the quality of our graduate programs? (Please range as widely as you wish regarding your personal recommendations).

APPENDIX C
SUMMARY DATA FROM FACULTY QUESTIONNAIRE
SPRING 1992

	ON CAMPUS	OFF CAMPUS	TOTAL
YEARS AT UF (AVG)	14.5	13.6	14.3
(# RESP)	142	57	202[1]
CHAIR SUPERVISORY COMMITTEE			
1a) NUMBER M.S. (AVG)	1.3	0.4	1.0
(# RESP)	127	53	183
1b) NUMBER Ph.D. (AVG)	1.6	0.3	1.2
(# RESP)	126	54	184
CHAIR SUPERVISORY COMMITTEE IN LAST 5 YEARS			
2a) NUMBER M.S. (AVG)	3.5	1.0	2.8
(# RESP)	134	54	192
2b) NUMBER Ph.D. (AVG)	3.0	1.0	2.4
(# RESP)	129	52	185
3) VALUE OF GRAD STUDENTS (AVG) (1=HIGHEST to 4=LOWEST)	2.1	2.5	2.2
(# RESP)	142	56	202
GRADUATE STUDENT PUBLICATIONS			
4a) FIRST AUTHOR (AVG)	5.6	2.4	4.6
(# RESP)	129	50	182
4b) COAUTHOR (AVG)	3.1	1.0	2.5
(# RESP)	115	42	159
PROGRAM SUFFERED DUE TO SHORTAGE OF STUDENT:			
5a) QUALITY (% YES)	45	51	46
(# RESP)	135	53	192
5b) QUANTITY (% YES)	55	75	61
(# RESP)	137	55	195
6) DIFFICULTY RECRUITING (% YES)	57	69	61
(# RESP)	136	52	192
8) SATISFIED WITH ADMISSION PROCEDURES (% YES)	81	75	79
(# RESP)	137	51	192
10) COURSE NEEDS MET (%YES)	72	72	72
(# RESP)	131	47	180

12) AMOUNT OF TEACHING EXPERIENCE (FREQUENCY OF RESPONSE)			
a) Not necessary	5	5	11
b) Asst. with course prep.	50	13	65
c) Lab or section T.A.	110	42	154
d) Guest or sub. lecturer	93	29	124
e) Full resp. for course	14	0	14
13) OBTAINING NECESSARY TEACHING EXPERIENCE (% YES)	67	48	53
(# RESP)	109	25	136
FORMER M.S. STUDENT EMPLOYMENT (AVG NUMBER OF STUDENTS)			
14a) EMPLOYMENT IN FIELD	2.2	1.9	2.2
(# RESP)	95	14	110
14b) EMPLOYMENT OUT OF FIELD	0.5	0.2	0.5
(# RESP)	32	6	38
14c) CONTINUED FOR Ph.D.	1.4	0.7	1.3
(# RESP)	80	13	95
14d) RETURNED FOR Ph.D.	0.3	0.3	0.3
(# RESP)	34	8	42
14e) WITHDREW W/O GRADUATING	0.3	0.3	0.3
(# RESP)	40	8	48
FORMER Ph.D. STUDENT EMPLOYMENT (AVG NUMBER OF STUDENTS)			
15a) BECAME FACULTY MEMBER	1.5	1.4	1.5
(# RESP)	66	13	79
15b) PROFESSIONAL, IN FIELD	1.7	1.2	1.6
(# RESP)	64	18	83
15c) POST-DOC EMPLOYMENT	1.0	0.7	1.0
(# RESP)	43	9	52
15d) EMPLOYMENT OUT OF FIELD	0.2	0.2	0.2
(# RESP)	23	6	29
15e) WITHDREW W/O GRADUATING	0.5	0.3	0.5
(# RESP)	35	6	41

CURRENT DEPT. ORGANIZATION ADEQUATE FOR NEEDS OF:			
16a) YOUR MASTER'S STUDENTS (% YES)	81	91	81
(# RESP)	131	32	167
16b) YOUR Ph.D. STUDENTS (% YES)	72	91	75
(# RESP)	120	33	157
16c) ALL MASTER'S IN IFAS (% YES)	60	70	72
(# RESP)	73	23	97
16d) ALL Ph.D.'S IN IFAS (% YES)	55	67	57
(# RESP)	71	21	93
17) REORGANIZATION OF DEPT'S IMPROVE G.S. TRAINING (% YES)	43	44	43
(# RESP)	105	43	152
19) FAVOR INTERDE RTMENTAL PROGRAMS (% YES)	78	68	76
(# RESP)	125	47	175

FOOTNOTES

1. The sum of the ON-CAMPUS values and the OFF-CAMPUS values may differ from the values indicated in the TOTAL column because some respondents did not list their work location and were, therefore, included only in the TOTAL calculation.

APPENDIX D

ADVANCED DEGREES AWARDED, COLLEGE OF AGRICULTURE, 1975-1991

Academic Year	M AG	MAMRD	MFRC	MS (NT)	MS	Ph D
1975-76	29	17	0	0	84	43
1976-77	28	11	2	0	94	39
1977-78	43	14	6	0	76	40
1978-79	42	10	2	0	95	53
1979-80	41	7	1	0	96	57
1980-81	41	15	1	0	100	50
1981-82	23	12	2	0	119	43
1982-83	21	18	1	0	123	59
1983-84	20	13	1	3	100	56
1984-85	17	0	2	20	106	54
1985-86	29	3	2	7	91	53
1986-87	18	0	3	15	99	64
1987-88	21	0	3	9	78	50
1988-89	8	2	0	16	77	51
1989-90	13	3	0	13	64	65
1990-91	11	0	0	19	70	48
Sub-Total:						
1975-80	183	59	11	0	445	232
1980-85	122	58	7	23	548	262
1985-91	100	8	8	79	479	331
Total:						
1975-1991	405	125	26	102	1472	825

APPENDIX E

ADVANCED DEGREES AWARDED BY DEPARMENT/SCHOOL, 1975-1991

Department/School	M AG	MAMRD	MFRC	MS (NT)	MS	Ph D
AG ED & COM	153				31	
AG ENGINEERING				2	17	1
AGRONOMY	23				197	137
ANIMAL SCIENCE	46				159	149
BOTANY	6				19	14
DAIRY SCIENCE	14				43	
ENT & NEM	26				157	148
FOOD & RES ECON		125		45	139	66
FOOD SCI & H N	46			53	138	31
FOR RES & CONS	1		26		136	15
MICRO & CELL SCI	2			2	36	32
ENVIR HORT	7				55	12
FRUIT CROPS	31				64	49
VEG CROPS	17				39	39
PLANT PATH	10				58	54
POULTRY SCI	12				24	
SOIL & WATER SCI	11				92	78
VET MEDICINE					68	
Total	405	125	26	102	1472	825

APPENDIX F

GRADUATE ENROLLMENT BY DEPARTMENT/SCHOOL

Department/School	1975	1980	1985	1986	1987	1988	1989	1990	1991
AG ED & COM	12	28	31	30	25	16	13	17	17
AG ENGINEERING	-	-	6	6	7	4	8	8	13
AGRONOMY	58	64	70	80	67	68	61	50	52
ANIMAL SCIENCE	74	90	59	47	49	54	68	56	62
BOTANY	9	17	8	9	12	9	5	3	4
DAIRY SCIENCE	14	12	22	27	17	18	9	11	21
ENT & NEM	82	87	58	56	61	62	56	48	50
FOOD & RES ECON	59	106	75	68	71	56	70	78	81
FOOD SCI & H N	28	55	67	70	69	68	57	63	68
HORT SCIENCES	55	70	71	72	68	77	84	75	81
MICRO & CELL SCI	2[1]	28	26	22	26	24	24	26	24
PL MOL & CELL BIO	-	-	-	-	-	-	-	-	12[2]
PLANT PATHOLOGY	22	23	22	24	30	32	32	36	28
POULTRY SCIENCE	1	11	9	5	6	6	2	3	7
SOIL & WATER SCI	23	55	48	44	39	38	37	38	40
VET MEDICINE	10	30	7	10	10	9	8	17	0
SUBTOTAL	448	676	579	570	552	547	534	529	548
FOR RES & CON	29	56	72	75	77	87	116	122	123
AGE/ENG	12	13	43	47	44	41	34	34	37
IFAS TOTAL	489	745	694	692	673	669	684	685	708

[1] In 1975, most students in Microbiology and Cell Science were registered through the College of Arts and Sciences.

[2]The twelve students majoring in Plant Molecular and Cellular Biology are also included in the totals of the departments with which they are associated: Horticultural Science (10), Microbiology and Cell Science (1) and Plant Pathology (1).