

# Undergraduate Resource/Development Teaching Programs in the South

Kevin T. McNamara and John C. Bergstrom

### Abstract

*This paper presents results of a study of natural resource/development programs in agricultural economics program in the 1862 and 1890 land grant institutions in the South. The results indicate that these programs, while small in student numbers, offer some opportunity for expanding student contact hours in colleges of agriculture. The results also suggest that resource/development courses will be of increasing interest to the extension and research clientele of the colleges of agriculture.*

### Introduction

Most land grant universities and colleges offer undergraduate courses in either resource economics or economic development or both. Resource economics involves the application of economic theory and techniques to analyze natural resource use, allocation, and policy. Economic development involves the application of economic theory and techniques to analyze phenomena and policies related to the economic structure, growth and development of regions and communities. Resource economics and economic development are generally highly complementary areas of study.

In land grant universities and colleges, undergraduate teaching programs in resource economics and economic development are typically taught within agricultural economics departments located in colleges of agriculture. Colleges of agriculture throughout the land grant system are faced with declining undergraduate enrollments. This decline has created concern among both college administrators and faculty because it directly threatens undergraduate instructional programs and directly threatens the research and extension missions of land grant universities and colleges.

Concerns over declining enrollments have caused college of agriculture administrators and faculty to re-evaluate undergraduate teaching programs. Such reevaluation can be facilitated by assessing the current status and future potential of undergraduate teaching programs. The purpose of this paper is to present and discuss the results of a survey of agricultural economics at 1862 and 1890 land grant universities and colleges in the South. The survey was conducted to examine the relative size of natural resource and rural development programs and assess the complementarity of

teaching responsibilities in these areas with the research and extension responsibilities of the teaching faculty. The survey also asked department heads and faculty to estimate growth potential for resource and development programs.

### Survey Methodology

A two part survey questionnaire was mailed to the department heads of all agricultural economics programs at the 1862 and 1890 land grant institutions in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia in July of 1987. A follow up letter and questionnaires were mailed to non-responding department heads in September 1987. Department heads were asked to complete Section 1 of the questionnaire: "An Overview of Natural Resource and Rural Development Programs". Department heads also were asked to request that faculty teaching an undergraduate course in the resource or development area complete Section 2 of the questionnaire: "Resource Economics/Rural Development Undergraduate Course Overview." Fourteen department heads responded to the survey. Five departments, North Carolina State and four 1890 institutions (Fort Valley State, South Carolina State, Southern and Virginia State) responded indicating that their departments did not have courses in the natural resource/rural development area. Department heads from Arkansas, Auburn, Clemson, Georgia, Kentucky, Mississippi State, Tennessee and Virginia Tech completed Section 1 of the questionnaire. Instructors of fifteen undergraduate resource or development courses at these eight universities completed and returned Section 2 of the questionnaire.

### Program Overview

In general the natural resource/rural development component is a minor part of agricultural economics programs. A summary of the responses for department heads on the overview of Natural Resource/Rural Development programs is presented in Table 1. Total undergraduate enrollments in eight responding departments ranged from a high of 185 students at the University of Georgia to 50 students at Clemson. Four of the departments had students with an area of specialization in the resource/development area, accounting for 2 to 10 percent of total department enrollment.

Five departments reported having two or more faculty involved in undergraduate resource/development teaching. Teaching full time equivalents (FTEs) in resource/development ranged from .1 to 1.75 accounting for 2 to 15 percent of the departments' total teaching FTEs. The average teaching/

McNamara is an assistant professor and rural development economist, Department of Agricultural Economics and Institute of Community and Area Development while Bergstrom is an assistant professor, Department of Agricultural Economics, University of Georgia, Athens, GA 30602.

research/extension split for faculty in the natural resource/rural development area was 70/25/0, with only two departments reporting resource/development teaching faculty having extension responsibilities. Four of the responding departments were teaching/research departments, i.e., had no faculty with extension responsibilities.

Department heads report that the largest share of their graduates take employment in agricultural economics and economics/business positions. Graduate school, self employment and noneconomics positions are the next three most important job placements. Resource/development positions account for 0 to 20 percent of departments' job placements. In the departments with students specializing in resource/development 5 to 20 percent of the students take positions in the resource/development area.

Department heads did not foresee dramatic changes in student interest in the resource/development area. All departments projected a change within a 10 percent increase or decrease over the next five years.

### Course Overview

A survey of instructors of natural resource/rural development courses was conducted to gain insight into the number of resource/development courses being offered, their enrollment and audience, and the courses' complementarity to the instructor's research and/or extension program. Fifteen faculty from seven institutions responded to the survey. A summary of the responses describing the courses and audiences is presented in Table 2.

Instructors from ten resource courses, four development courses, and one applied welfare course completed and returned the survey questionnaire. One of the resource courses also was listed as an applied welfare/public finance course. A resource course was a core curriculum requirement in three programs. One of the rural development

courses was reported to be a core requirement.

At Clemson three natural resource and one regional science course are taught. Auburn reported two natural resource courses. Arkansas, Georgia and Virginia Tech each reported one natural resource and one rural development course. Natural resource courses that were core courses had the highest enrollments and generally did not attract students from other departments. The required rural development course attracted 66 percent of its students from other departments.

The non-required courses all recruited students from outside departments, seven courses attracting more than 40 percent of their students from nonagricultural economics majors. Most of these students were fisheries, forestry or wildlife majors. The required courses had a minimum of a microeconomics course as a prerequisite. Half of the elective courses had a similar prerequisite.

Six of the natural resources courses had required texts. Two required Barlowe's *Land Economics*, while the other four used a resource economics text. The regional economics and the applied welfare/public finance courses also required texts. The three rural development courses and the other four natural resource courses did not have a required text.

Instructors were asked to rate their course's complementarity with their research/extension activities and the course's impact on the departments graduate recruitment. All instructors except one indicated a medium to high level of complementarity between their course and their research and/or extension program. The mean score for complementarity on a one (low) to nine (high) scale was 6.7. Two was the lowest ranking and nine the highest. Faculty did not think the course they taught had a strong impact on graduate student recruitment. The mean score on a one (low) to nine (high) scale was 3.7. The low score was zero and the high

Table 1: Resource/Development Program Overview

	Arkansas	Auburn	Clemson	Georgia	Miss.	Kent.	Tenn.	Virginia
Total Undergraduate Enrollment	130	90	50	185	180	161	75	120
Resource/Development Specialization								
Students	none	none	5	18	3	none	none	6
Percent of Enrollment	--	--	10%	10%	2%	--	--	5%
Resource/Development Teaching Faculty								
Faculty with R/D Teaching Respons.	2	4	2	4	2	1	1	4
Full-Time Equivalents	.2	.7	.4	1	.4	.1	.1	1.75
Percent of Total	8%	7%	7.5%		6%	5%	.2%	15%
Job Placement, Baccalureate graduates, By Percent								
Resource/Development Position	--	1	10	5	1	5	5	20
Agricultural Economics Position	45	80	35	30	35	30	10	20
Economics/Business Position	25	5	20	20	10	10	65	---
Non-economics Position	10	5	5	15	10	15	--	---
Resource/Development Grad School	10	1	9	5	4	--	2	60
Other Grad School	--	5	15	15	15	15	8	---
Self Employment	10	3	5	8	15	20	5	---
Other	--	--	1	2	10	5	5	---
Projected Resource/Development Enrollment Change for next 5 years	-10%	+10%	+10%	+10%	--	+10%	--	+10%

Table 2. Course Description Summary

Type <sup>1</sup>	Arkansas		Auburn		Clemson				Georgia		Kentucky	Miss. St.	Tennessee	Virginia	
	NR	RD	NR	NR	NR	NR	NR	RE	NR	RD	Nr	AP	NR	NR/AP	RD
Frequency <sup>2</sup>	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1
Enrollment	12	6	30	12	6	14	12	9	27	10	15	38	12	45	60
Percent Ag. Econ. Majors <sup>3</sup>	9	33	90	60	50	0	25	50	100	90	13	100	90	70	66
Dept. of Non Majors Required Ag. Econ. Course	2	2	1/2/4	1	1/2/4	1	1	4	--	5	1	--	1	5	3
Prerequisite <sup>4</sup>	No	No	1	1	1	No	1	1	1	No	No	2	1	1	No

<sup>1</sup> AP=Applied Welfare/Public Finance; NR=Natural Resource; RD=Rural Development; RE=Regional Economics

<sup>2</sup> 1=At least once a year; 2=Every other year; 3=Not offered during last 2 years

<sup>3</sup> 1=Fisheries, Forestry, Wildlife; 2=Other Agriculture; 3=International Studies; 4=City and Regional Planning; 5=Other/mixed

<sup>4</sup> 1=Intro Micro and Macro; 2=Intermediate Micro

<sup>5</sup> Course is required for forestry

nine. Four instructors indicated that the course that they teach complements their graduate recruitment efforts.

Six instructors indicated that they had papers and/or publications that were a direct result of their course during the past three years. These instructors had a combined total of three journal articles, 7 other publications and 11 presented papers. The instructors generally projected limited enrollment growth for the next 5 years. Ten respondents projected enrollment growth between ±10 percent. Three instructors projected growth of between 20 and 40 percent.

Department heads were asked to project changes in support for their department's teaching, research and extension programs. The responses are summarized in Table 3. Department heads generally thought support for teaching, research and extension in resource economics would be maintained or increased. While they did not see changes in local government support, they projected increases in state and federal government and private institution support. They also projected increasing support by college and university administration. All departments except one perceived increased university support for extension natural resource economics programs.

Department heads perceive some increase in support for teaching, research and extension programs in the development area, although lower than resource programs. The greatest sources of increased support are from state and federal government and from private institutions.

Instructors, generally, perceived increasing support for teaching, research and extension activities in both the natural resource and rural development areas. Increases in support for rural development activities was perceived to be greater than from natural resource activities from all constituencies.

Comparing the perceptions of the department heads to those of the instructors, the instructors were generally more optimistic about increases in support. And, while the department heads indicate greater increases in support for natural resource areas than for development areas, instructors saw greater increases in support for the development area.

## Discussion

### Program Development and Recruitment

The magnitude of the decline in undergraduate student enrollment in colleges of agriculture nationwide is illus-

trated in Figure 1. In 1979 colleges of agriculture undergraduate students reporting to the National Association of State Universities and Land Grant Colleges (NASULGC) numbered 97,754 students. By the fall of 1987 college of agriculture baccalaureate enrollment had fallen to 64,595 students, a decline of 34 percent (NASULGC). Enrollments rebounded slightly in 1988 to 66,294. Agricultural economics baccalaureate enrollments declined 15 percent from 11,634 students in 1982 to 9,916 students in 1986 (NASULGC).

In response to drastically declining enrollments, there have been suggestions that colleges of agriculture abandon undergraduate education to concentrate on graduate training (Gelinas). This suggestion has not been widely endorsed by administrators or faculty who have responded to declining enrollments with a variety of efforts, such as expanded recruitment, liberalized admissions, program diversification and business options. So far, these efforts have had limited success (Conner).

A number of institutions and departments have responded to this reduced enrollment with recruitment strategies designed to better acquaint potential students with programs of study in colleges of agriculture (Betts and Newcomb; Broder and Houston) or specific departments within the college (Pescatore and Harter-Dennis). While the results at some institutions have been encouraging, the overall enrollment impact is uncertain. Colleges' ability to maintain and increase the number of undergraduate students enrolled, however, will require continued commitment of faculty and other departmental resources despite trends toward reduced total budgets.

The decline in college of agriculture enrollments parallels the financial decline in agriculture which has been occurring since the late 1970's and early 1980's. Many potential agriculture students simply may not view agriculture as providing sufficient job opportunities. Also, the high interest in agricultural-related careers spurred on by the "back to the land" and environmental movements of the 1970's has been largely replaced in the 1980's by a higher interest in management careers. Undergraduate enrollments in business schools located at land grant universities and colleges have sky-rocketed, competing with agriculture colleges for limited university resources.

Many agricultural economics departments have responded

to the decreased enrollments in the face of increased interest in business management careers by re-directing undergraduate teaching programs towards 'agribusiness management'. A greater emphasis on agribusiness is clearly consistent with current student demands. The ability of agribusiness management programs to attract and retain high quality students is, as of yet, uncertain.

Providing students with the opportunity to specialize in agribusiness management appears to be in the best interest of agricultural economics departments. One of the historical strengths of agricultural economics departments, however, has been the ability to offer students a diversity of subject areas in which to specialize. Specialty areas, for example, include production, marketing, international trade, finance, policy, economic development, and resource economics. In order to continue to meet important educational needs which are not met in other undergraduate programs, as well as maximize opportunities for student recruitment, it may also be in the best interest of agricultural economics departments to maintain and publicize their traditional program diversity.

In the long-run, any one agricultural economics specialty field, including agribusiness management, probably cannot be expected to attract vast sustained numbers of new students. Interest in specialty fields appears to follow a somewhat cyclical pattern. For example, general public interest and concern on rural poverty and environmental issues appears to be on the upswing. This upswing may stimulate a rise in student interest in economic development and resource economics programs. Greater public concern over resource and development issues may also lead to increased institutional support for teaching, research, and

extension programs in economic development and resource economics.

In the survey conducted for this study, department heads projected a general increase in support for teaching, research, and extension programs in economic development and resource economics. The responses from instructors support this assessment. Administrators and faculty, however, did not project large increases in undergraduate student interest in either economic development or resource economics.

If trends of the past decade continue, large increases in undergraduate student interest in economic development and resource economics does indeed seem unlikely. However the reverse may happen. Projected increases in institutional support for teaching, research, and extension programs in economic development and resource economics are identified in the survey. Current trends towards greater public interest in rural development and environmental issues may lead to increased demand for undergraduate resource/development teaching programs. This can become a reality if student interest in college majors follows a cyclical pattern and the employment opportunities of graduates is supported by stronger demand for their talent from the public and private sector.

Program development and student recruitment focused on economic development and resource economics may therefore provide another viable option for increasing college of agriculture enrollments especially as college recruitment programs seek to attract students from nonagricultural and urban backgrounds. The relative importance of this option may be increasing since the pool of traditional college

Table 3. Perception of Change in Support for Resource/Development Programs in Teaching, Research and Extension in Percentages<sup>1</sup>

	College Administration			University Administration			Local Government			State Government			Federal Government			Private Institutions		
	P	S	D	I	S	D	I	S	D	I	S	D	I	S	D	I	S	D
<b>Department Heads</b>																		
<b>Resource Economics</b>																		
Teaching	13	75	13	--	88	13	--	100	--	13	88	--	25	62	13	38	62	--
Research	38	50	13	25	75	--	--	88	--	50	38	13	38	50	13	50	50	--
Extension	38	38	13	75	13	--	25	63	--	50	25	13	25	50	25	38	50	--
<b>Rural Development</b>																		
Teaching	25	50	25	13	75	13	--	100	--	13	88	--	25	62	13	38	62	--
Research	25	63	13	13	88	--	13	88	--	50	38	13	38	50	13	38	50	--
Extension	25	50	13	--	88	--	25	63	--	50	25	13	25	38	25	38	50	--
<b>Instructors<sup>2</sup></b>																		
<b>Natural Resources</b>																		
Teaching	21	64	7	7	71	21	7	79	7	29	57	14	7	79	14	7	79	7
Research	43	57	--	--	100	--	29	64	14	64	36	7	21	50	29	21	64	14
Extension	43	29	29	36	29	36	43	36	14	43	36	21	7	57	36	14	50	36
<b>Rural Development</b>																		
Teaching	36	57	14	36	43	21	43	57	--	36	64	--	29	50	21	29	64	7
Research	64	36	--	43	57	0	43	57	--	14	36	--	29	64	7	21	71	--
Extension	57	14	29	50	21	29	57	43	--	57	43	--	21	57	14	21	71	7

<sup>1</sup> Based on responses from Arkansas, Auburn, Clemson, Georgia, Kentucky, Mississippi State, Tennessee and Virginia Tech.

<sup>2</sup> Based on responses from 14 faculty members. One faculty member teaches two courses.

<sup>3</sup> I=Increase; S=Same; D=Decrease

of agriculture students (e.g., students with agricultural backgrounds) is continuing to decrease in most states.

## Integration

The potential need to increase the proportion of college resources allocated to teaching has serious implications for faculty, especially untenured faculty who must focus their attention on establishing a research program and publication record to ensure tenure. Faculty's ability to integrate their teaching, research and extension efforts, and colleges' ability to facilitate this integration across programs has important implications for an individual's success in the promotion-tenure process and for the overall vitality of colleges' total instructional, research and extension programs. Lubbin and Catlett argue that integration should promote the total land grant mission and actually increases individual faculty productivity.

In the survey conducted for this study, faculty in economic development and resource economics generally considered their teaching duties as complements to their research and extension duties. If the responsibilities do complement each other, stronger undergraduate teaching programs in economic development and resource economics would also strengthen the research and extension missions of land grant universities and colleges. This result would benefit individual faculty members, undergraduate students, graduate students, and the general public and private clientele of land grant universities and colleges.

## Summary and Conclusions

Natural resource/rural development programs represent a relatively small component of agricultural economics programs. In the four departments reporting a resource and/or development option, enrollments in this area accounted for only 2 to 10 percent of the department's total enrollment. While department heads and instructors perceive increasing institutional support for resource and development programs, neither foresee large increases in undergraduate student interest in the resource and/or development area. The projected increases in institutional support combined with greater public interest in resources/development issues may help to stimulate greater student interest in teaching programs in these areas.

Departments that offered more than one course in the natural resource/rural development area recruited a large share of their students for the courses from nonagricultural economics majors. More technical required courses, however, tended not to attract many non-majors. General courses in resource economics and economic development may provide agricultural economics departments with good opportunities to recruit undergraduate students and/or to increase student classroom contact hours. Uncertain employment opportunities for graduates with resources/development specialization at the B.S. level limits student recruitment potential. Undergraduate resource/development teaching programs, however, may continue to meet an important educational niche, and contribute to the goal of increasing College of Agriculture enrollments.

Faculty who teach resource/development courses generally felt teaching the course complemented their research

and/or extension programs. Professional presentations and publications were developed by six faculty as a direct result of their teachings. Faculty also thought that the courses provided limited opportunities for graduate student recruitment. Integrating teaching, research, and extension responsibilities of faculty clearly appears to be desirable, particularly in land grant universities and colleges where faculty are expected to contribute to all three of these missions.

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