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Land-Grant Undergraduate Ag Programs: They Need Revitalizing

by Larry J. Connor

Research and extension program priorities of land-grant colleges of agriculture have received considerable attention over the past several decades. In contrast, undergraduate education has received comparatively little attention. However, this may be changing. Negative publicity about declining undergraduate enrollments and stressed budgets for agricultural college teaching programs at some institutions are leading some deans and faculties alike to examine their undergraduate programs and consider how curricula and courses can better meet student and employer needs. Unless this is done, research and extension programs, as well as teaching programs, will be adversely affected.

Enrollments Are Down

Undergraduate enrollment in the agricultural sciences at land-grant universities declined by 38 percent in the nine years from 1978 to 1987 according to a 1988 report to the National Association of State Universities and Land Grant Colleges. All disciplines experienced a decline except for food science/human nutrition and related biological/physical sciences. The nearly 40 percent decline for nine years would have been much greater if there had not been a 5,000-student increase in the related biological/physical sciences since 1982. Although preliminary 1988 data suggest some rebound in student numbers, agricultural colleges have a definite enrollment problem.

Undergraduate agricultural enrollments sharply deteriorated in the 1980s. During these years high interest rates and rapid increases in the value of the dollar contributed to the severe farm financial crisis with adverse effects on many agribusiness industries. These conditions affected both the supply of agricultural and rural students and the number of available jobs. Also, government employment opportunities contracted in natural resource areas because of state and federal budget constraints. Student values and vocational preferences consequently shifted toward majors perceived to have better job opportunities.

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There Are Other Concerns, Too

Enrollment problems are not the only concerns related to agricultural undergraduate education in the United States.

More universities are undertaking undergraduate education reform in response to growing criticism of the quality of U.S. undergraduate education. The resulting undergraduate reforms that are initiated university-wide can profoundly affect colleges of agriculture through increased admission requirements, changed general education requirements, more comprehensive graduation requirements and possible competency testing as a prerequisite for university graduation.

The number of department majors/tracks/options/courses has grown considerably over the past two decades and must now be reconciled with the decline in student numbers and budget constraints facing many agricultural colleges.

Serious attempts to improve the quality of teaching in colleges of agriculture are limited with the possible exception of increased use of computers in undergraduate curricula. Agricultural colleges spend little money on improving undergraduate teaching as compared to improving the capabilities of research and extension staff.

Agribusiness, one of the more prominent undergraduate majors in agricultural colleges, was subjected to criticism at a recent White House Conference on agribusiness. In fact, the president of one prominent Midwestern Land Grant University went so far as to state that he failed to understand why there should be a separate agribusiness program in the college of agriculture, and suggested that it should be located in a business college.

Teaching budgets are stressed as a result of the devastating impacts of inflation in the 1970s and the budget cuts incurred as a result of the recession in the early 1980s. Declining enrollments will lead to budget cuts and force some difficult choices on teaching administrators.

Questionable Assumptions

The enrollment declines have generated a variety of responses by administrators and faculty. Many of these responses have been based on questionable assumptions and to date they have been largely unsuccessful.

> Land-grant colleges of agriculture are being affected by declining undergraduate enrollment. In addition, other developments such as the comprehensive reforms of university undergraduate education are impacting on these colleges. Effectively coping with these developments requires a collective college approach. Efforts by individual departments are not sufficient.

Expanded Recruiting. This solution has assumed that enrollment in agricultural colleges may be greatly increased with aggressive and sound recruiting procedures, including the use of professional recruiters, student ambassadors, attractive brochures and scholarships. Colleges can supposedly increase enrollment by dealing with the image problem of "agriculture," and providing adequate information to potential students on career opportunities in agriculture and related fields. Despite stepped-up recruiting efforts, there is little evidence to date that these efforts have paid off in increased enrollments or in the quality of students.

Liberalized Admissions. This solution assumes the students are being admitted to universities with no regard to "available positions," and that qualified agricultural students are somehow being denied admission. Despite a variety of admission procedures and policies, most colleges have experienced the same enrollment trends. This assumption also poses a further threat to quality.

Program Diversification. A response by many academic departments to declining enrollments has been to add additional majors or options. Though program diversification has some merit, program clarification is much more important. Increased attention to the needs of potential employers and program quality may be more relevant to increasing the demand for graduates.

Disciplinary Enhancement. This response assumes that undergraduates have greater marketability if disciplinary skills are more heavily emphasized. Though this assumption has some validity in better preparing students to enter competitive graduate school environments, little empirical evidence exists that emphasis on disciplinary skills would result in increased employment opportunities or enrollments. A recent Agribusiness Management Aptitude and Skills Survey conducted by Litzenberg and Schneider indicated that the major characteristics desired by employers were "interpersonal characteristics" and "communication skills."

Departmental Based Programs. Agricultural faculty strongly believe that academic programs must be anchored to individual departments. This has made it difficult to develop professionally based college majors that integrate several disciplines. Examples would be packaging and environmental resource management.

Business Options. Increased enrollments and demand for business school graduates have not gone unnoticed by agricultural faculties, despite the decline in student numbers in agribusiness programs. Consequently, many agricultural production departments have added business options to their curricula. With no integrating business management courses within these majors, it is easy to understand why agribusiness firms have been less than enchanted with some agribusiness programs.

Administrative Teaching Bias. Many faculty members assume that land-grant administrators have an explicit bias against undergraduate teaching. Though there may be some validity to this

assumption, it ignores several fundamental facts. Undergraduate education is typically a minority shareholder of faculty time. In many departments, few faculty members have 50 or more percent of their time allocated to undergraduate education. Undergraduate programs in large departments are handled by as few as 20 to 30 percent of the total faculty. As a consequence, time allocations have not weighed teaching heavily in faculty evaluations.

Employment Markets. Two conflicting assumptions have often been made about employment markets. The almost inevitable response of department chairpersons to declines in student numbers is that there are plenty of jobs if students could be attracted into the major. The macro effects of all chairpersons making this assumption are seldom considered. The antithesis of this assumption is that agricultural colleges should be downsized because demand for graduates has slackened.

Both assumptions ignore the results of the 1985-90 USDA

national assessment of employment opportunities for graduates in agriculture, food, natural resources, veterinary medicine and related fields. This study projected more than 48,000 annual employment opportunities compared with less than 44,000 qualified college graduates anticipated each year, with a surplus in employment categories such as farmers, ranchers, education and communications, and shortages in scientific and business specialties within the U.S. food and agricultural system.

Non-Synergism With Research, Extension and Graduate Programs. A recent article

in the April 13, 1988 *Chronicle of Higher Education* had the following title: "To Survive, Agricultural Colleges May Need to Abandon Their Undergraduate Programs." In it, D. A. Gelinis indicated that agricultural colleges need to abandon undergraduate programs and concentrate on graduate programs. No synergistic relationships were assumed between undergraduate education and graduate, research and extension programs. This is the most alarming assumption.

Graduate programs depend on students from colleges of agriculture, other domestic majors and foreign students. In the best of all worlds, an appropriate student balance could be achieved from these three sources to capitalize on their relative strengths. Graduate numbers have remained relatively stable because of the crucial role graduate students play in research. With declining college undergraduate enrollments and foreign agricultural students, graduate numbers have been maintained by assimilating more domestic students with nonagricultural degrees. The resulting graduate student body is less knowledgeable about agricultural technology and rural and agricultural institutions, more basic science and disciplinary oriented, and less concerned with traditional agrarian and rural values. As evidence, note the decline in students interested in farm management extension.

Changing graduate student compositions impact agricultural



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faculty compositions over time. New faculty members have moved to a greater emphasis on graduate education and disciplinary research, and less emphasis on applied research, extension and undergraduate education. A major evolutionary consequence has been a blurring of the distinctions between applied fields in agriculture and the basic disciplines in other colleges.

A declining number of undergraduate agricultural majors has reduced the talent pool of agricultural graduates for extension service programs and necessitated hiring more people with nonagricultural backgrounds and training. Though this has not seriously affected some programs, traditional agricultural programs have been affected because of declining expertise among field staff members. It has also become difficult to recruit new faculty members to become extension specialists, because many departments/professors discourage graduates against entering extension careers.



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Needed Changes

Undergraduate agricultural programs need fundamental restructuring. This restructuring should be aimed at providing students with the necessary background and skills to function as effective professionals in diverse employment markets, and as responsible citizens in an ever-changing society. Three areas particularly stand out for improving undergraduate education: the design and administration of majors, general education requirements, and quality of teaching.

Majors. In designing and administering majors, agricultural colleges need to clarify the disciplinary versus professional orientation, the subject matter emphasis, and the applied academic area focus. This clarification must be accomplished subject to the constraints of teaching budgets, the potential demand for graduates, the explicit college teaching mission, and the ability to provide quality education (breadth and depth).

Faculties must distinguish between discipline based majors such as agricultural economics and forestry and professional majors such as agribusiness and packaging. Disciplinary majors exist only where there is a significant number of national depart-

ments offering baccalaureate and doctoral degrees and one or more established national journals and professional societies. They are designed to help students develop an understanding and expertise in dealing with a selected body of knowledge, and to prepare them for competitive graduate education programs. In contrast, professional undergraduate programs are more vocational, multidisciplinary, and subject matter and market oriented.

In too many instances, departments are mixing disciplinary and professional education under one major to the detriment of both. Course selection is particularly important in differentiating these majors. For example, calculus is needed with an agricultural economics major, whereas courses in selling and postharvest physiology may be more useful for a food marketing major.

The subject matter focus of undergraduate college programs still has a heavy orientation toward production agriculture. Food, natural resources, and rural and community development have received much less attention. Yet, employment opportunities appear to be expanding more for the larger food system than with production agriculture. A change in college subject matter emphasis and funding is warranted.

Agricultural majors depend on the basic academic disciplines of the university to provide the foundations for the applied focus of the college. Agricultural majors are usually the major "applied" natural science/social science/business and engineering programs of the university. Unfortunately, this applied academic focus is not clarified in their design or names, and they are subsequently poorly understood and unattractive to students and parents who think in the context of science, business, engineering, etc. The academic area emphasis of agricultural majors needs to be clarified, and college funding priorities adjusted to reflect different job opportunities for area graduates.

General Education. General education currently is receiving renewed attention at U.S. universities. Within agricultural colleges, general education includes the university and/or college requirements specified for graduation for all students.

For all agricultural students, general education requirements can be expanded only moderately in such areas as international understanding (including foreign language, trade, resources, geography, etc.), cultural awareness (domestic and international), computer science, and food/agriculture/natural resource institutions. Enhanced communication systems, the increasing dependence of the United States on the world economy, and the sensitivities associated with alternative cultures point

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to the need for improved international education. On the domestic level, students need an increased understanding of diverse cultures (inasmuch as Hispanics, American Arabs and fundamental protestant religious groups continue to expand). Though American colleges have made great strides in adopting computer science requirements and applications, the computer literacy of future students needs to be substantially higher than that of the

existing faculty. Finally, graduates need a knowledge of the history of the evolution of our agricultural/rural/natural resources institutions, their dynamics, and current problems.

A major problem for agricultural colleges in general education has been in adapting to the great diversity of major/options. Faculty members have long battled over college requirements that are complementary and supportive to the various heterogeneous parts of the college. The time has come for colleges to deal with their heterogeneity problems by defining homogeneous program areas such as applied natural science/social science/natural resources/business management/engineering for which more specific college requirements can be developed.

Leadership development has declined in importance as an objective of agricultural education.

Improved Quality of Teaching. After all is said and done about undergraduate education (and more is usually said than done), the most important thing is still what happens within the classroom! Agricultural colleges must begin to invest more in improving the quality of undergraduate instruction. Teaching approaches other than lecture or lecture/laboratory need to be expanded.

Future teaching methods will vary according to whether instructors are dealing with disciplinary or professional majors. For professional majors, various types of internships, case studies and external interactions will increase in importance as professors attempt to bring the "real world" into the classroom or take the classroom into the real world. For both disciplinary and professional majors, an expanded use of computers and greater rigor in various applications can be expected. However, the computer emphasis will vary when one addresses scientific purposes as contrasted with specific business or government applications.

A greater emphasis needs to be placed on an agricultural liber-

al arts approach to education stressing critical thinking, writing, ethics/values, problem solving and leadership development. Historically, graduates praised agricultural faculty members for helping to develop leadership capacity that stressed independent thought and vision and for propelling them into significant leadership opportunities. Unfortunately, many colleges have focused on technical and highly specialized training, and *leadership development has declined in importance as an objective of agricultural education.*

Finally, the issue of service courses must be reexamined. Agricultural faculty have a university obligation to provide general education courses relating to such areas as food, world hunger, resource ecology, soil and the environment. Unfortunately, most colleges have overlooked this university responsibility. As a practical matter, the importance of general agricultural education courses for the university as a means of recruiting majors should not be overlooked.

In summary, the economic and political events of the 1980s slackened the demand for agricultural and natural resource graduates. In turn, student vocational preferences shifted toward other areas of the university. However, it is time to arrest these trends. Further downsizing of the undergraduate college of agriculture enrollment is not in the best interest of either agriculture-food-and-natural resource-based employers, students, or agricultural colleges. The demand, as well as student preferences, require reshaping.

The accomplishment of these two goals requires substantive changes in the design and administration of agricultural majors, their general education and the quality of their instruction. **C**

For More Information

Fall 1987 Enrollment in NASULGC Colleges of Agriculture, RICOP Committee, Division of Agriculture, NASULGC, March 1988.

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HAVE YOU HEARD...

That the University of Minnesota has a new center—The Center for International Food and Agricultural Policy? Its first director is C. Ford Runge, who in 1988 completed a year as a special assistant to the Ambassador in charge of U.S. trade negotiations at the General Agreement on Tariffs and Trade in Geneva, Switzerland.

The Center already has an endowment of over one million dollars. Among its many activities is its annual international food and agricultural policy article competition. The prize is \$2000. Submissions are due September 1, 1989 for articles published in 1988.

See the Center's ad on page 19 for more detail and for the Center's announcement of graduate study fellowships.