Recruiting to halt the decline in undergraduate agronomy enrollments

C. A. Beyrouty and R. K. Bacon

ABSTRACT

A questionnaire was sent to agronomy and related departments at land-grand institutions to determine trends in undergraduate enrollments and to identify effective recruitment techniques. Results from the questionnaire (71% response) showed that university enrollments have increased by 9% since 1978, while 21 and 51% enrollment declines for the same period were seen in the colleges of agriculture and agronomy departments, respectively. Most of the questionnaire respondents are either using or considering recruitment programs to attract students into agronomy. Recruitment techniques considered to be effective include strengthening the introductory crops and soils courses, offering scholarships to incoming students, and recruiting at special functions such as career days. Techniques rated as relatively ineffective include presenting recruitment talks to high school students, hosting state judging contests, and sending promotional materials such as brochures to students.

Additional index words: College of agriculture enrollments, Salaries, Teaching programs.

In the mid-1960s land-grant colleges of agriculture experienced a dramatic increase in undergraduate enrollments (Carter et al., 1979). During the late 1970s enrollment levels began to decline (Bruen et al., 1985). This decline has continued even though the number of graduates may not be sufficient to satisfy the need for agricultural expertise (Reisch, 1984).

The number of students studying plant and soil sciences has also declined in recent years, to a further extent than in other agricultural fields of study (Bruen et al., 1985). Although some institutions have recruitment efforts, the decline in student numbers indicates that more aggressive recruiting programs may be necessary. The low student numbers could weaken university teaching programs in agronomy and produce an inadequate supply of competent agronomists for future needs. Recently recruitment programs have either been implemented or formulated (Beck and Richey, 1980; Haque, 1985; Mortensen, 1981; Reisch, 1984; Ross, 1980). Since the composition of agricultural majors is significantly different from that of 15 yr ago (Burger and Brandenburg, 1979; Daluge and Thompson, 1981), recruitment efforts may need to be redirected to new groups of potential students.

Considerable information is available concerning the enrollment trends in agriculture and the use of recruiting to increase enrollments. However, little information is available concerning trends in undergraduate agronomy enrollments. This paper examines the trends in undergraduate enrollment at land-grant universities, colleges of agriculture, and departments of agronomy; the perceived impact of enrollment declines on maintaining quality teaching programs; and the types of recruitment techniques used by various departments.

MATERIALS AND METHODS

To acquire information about enrollments and recruiting techniques, a questionnaire was sent in the spring of 1985 to departments of agronomy and agronomically related science departments at land-grant universities. The questions represented four areas of interest: (i) enrollment trends, (ii) student population composition, (iii) need for students, and (iv) recruiting techniques. The response rate was 71%. Results from the questionnaire were nationally and regionally tabulated, according to the American Society of Agronomy geographical regions of the USA (North Central, North Eastern, Southern, and Western)

The information obtained from the questionnaire dealt directly with agronomy. Supplemental data from surveys taken by the National Association of State Universities and Land Grant Colleges (Burem et al., 1985; Carter et al., 1979) and the College Placement Council (1984) were used where appropriate. These surveys provided general information on agriculture and nonagricultural disciplines.

RESULTS AND DISCUSSION

Shifting Enrollments

During the 10 yr from 1974 to 1984, enrollments in agronomy and colleges of agriculture peaked in 1978. Consequently, enrollments from 1978 were chosen as the base year for comparison with 1984 enrollments. University enrollment in 1984 increased an average of 9% over that of 1978 with few regional differences (Table 1). In contrast, enrollments both in the colleges of agriculture and in agronomy have decreased since 1978 with agronomy enrollments declining faster than those in the colleges of agriculture.

Percentage of female and nonfarm background students enrolled in agronomy has increased from 1974 to 1984 (Table 2). Approximately 26% of agronomy undergraduates were female in 1984 compared to 17% 10 yr earlier. Further, 56% of the agronomy students in 1984 have nonfarm backgrounds, while only 45% had nonfarm backgrounds in 1974. This increase in percent female and students with nonfarm background has been recognized for several years (Dunkelberger and Molnar, 1980; Helsel and Hughes, 1984; Burger and Brandenburg, 1979; Daluge and Thompson, 1981). The trend among regions indicates that the agronomy departments in the North Eastern and Western regions have the greatest percentage of females and students without farm experience.
Participants were asked to identify departments in their colleges that have experienced enrollment increases since 1980. Over 50% of the respondents indicated that agricultural economics departments have increased in student enrollment. Other departments reported to have increasing enrollments were animal science, food science, home economics, biochemistry, agricultural education, agricultural engineering, horticulture, and restaurant management. Data from the NASULGC survey (Table 3) verifies an increase in animal science and social science (which includes agricultural economics) from 1978 to 1984 with a corresponding decrease in the plant and soil sciences.

Several factors may contribute to the enrollment decline in agronomy. First, conservation of natural resources and preserving the environment may not be the drawing force in a career choice as it was during the 1970s. Second, agriculture and specifically production agriculture has experienced economic difficulty. In the past, agronomy curricula have attracted students interested in production agriculture (Dunkelburger and Molnar, 1980). However, the media has presented unfavorable reports concerning production agriculture (i.e., farm foreclosures, declining commodity prices, and a surplus of farm products). Students selecting agriculture are choosing careers in business (Dunkelburger and Molnar, 1980) rather than the production occupations.

Low starting salaries for agronomy graduates may also contribute to lower agronomy enrollments. Results from our questionnaire and the College Placement Council (CPC) Survey of 1984 (Table 4) indicate that salaries in agriculture and agronomy are lower than for most disciplines. Within the four main divisions in the CPC survey, salaries ranged from $25 908 for engineering to $18 376 for humanities and social sciences. Average salaries in agriculture were $17 016 annually. According to the results from our questionnaire, salaries in agronomy were nearly $1000 per year lower than average salaries in agriculture.

The distribution of salaries across the four geographic regions indicates that salaries in the Southern and North Central regions were approximately $17 000, while annual salaries in the Western and North Eastern regions were near $15 000. The range in salaries across all departments responding to the survey was $13 000 to $20 000 for B.S. graduates.

### Reasons for Recruiting
The questionnaire was designed to assess the impact of declining enrollments on a department's ability to maintain a quality teaching program. Some of the effects declining enrollments will have on the quality of a teaching program include (i) a reduction in the number of courses offered, (ii) decreased teaching funds, and (iii) fewer teaching faculty. Respondents were asked to determine their own optimum enrollment and indicate the percentage enrollment decline they would have to experience to observe a reduction in any of these three categories.

Departmental enrollments, nationally, in 1984 were 30% below the perceived optimum (Table 5). Respondents felt enrollment declines of 37% would cause a drop in teaching funds. However, the number of courses offered and faculty size were felt to be less affected by declining enrollments.

Retaining the current levels of teaching programs is not the only reason for recruiting. The training of competent agronomists for eventual employment should also be one of the driving forces for attracting new students. The results from our questionnaire indicate there is a continuing need for students. Nationally, 79% of the graduates in 1984 were employed in agriculturally related jobs within 6 months after graduation. A 79% placement is relatively high (Nancy Noth, Director of Career Planning and Placement Office at the University of Arkansas, personal communication).
nication) compared to disciplines such as biology and humanities with a 50 to 60% placement rate, although somewhat lower than the 85 to 90% placement for engineering. Placements were higher in the Southern and North Central regions (90% and 86%, respectively) and lower in the Western and North Eastern regions (76% and 60%, respectively).

**Recruiting Programs**

Recruiting techniques currently being utilized by various agronomy departments are listed in Table 6. Departments utilizing each technique rated its level of effectiveness in attracting students. The most common recruiting techniques include presenting recruitment talks to high school students, hosting state judging contests, and strengthening introductory crop and soils courses. Approximately 44% of those departments strengthening their beginning courses believe this technique has been effective in attracting new students. Only 3% of those presenting recruitment talks to high school students view this technique as effective.

Effective but little used recruiting efforts listed in Table 6 include providing scholarships to incoming students, recruiting at special functions such as a Career Fair Days or 4-H events, developing a general agronomy course for nonagriculture majors, providing co-op experience for undergraduates, and writing letters to high school students. The development and use of promotional materials such as brochures that advertise agronomy does not appear to be an effective recruitment tool.

The development of a recruitment program depends to a large extent on availability of funds. The total investment towards recruitment could be high depending on the methods used. For example, activities involving travel or development of visual aids require considerably more support money than presenting talks on campus. Respondents were asked whether funds were available for support of recruiting activities on a departmental, college, or university basis (Table 7). Results showed that financial support was available to departments for college recruiting with less support available for departmental and university recruitment activities. This presents a problem to departments interested in developing an active recruitment program that may require a sizeable budgetary expense.

A significant amount of money can be spent supporting travel for faculty to talk to high school groups. However, the Department of Horticulture at Clemson University has kept recruiting expenses low by utilizing undergraduate students to recruit at high schools, which has slightly increased undergraduate enrollments (Haque, 1985).

**CONCLUSIONS**

The results of a questionnaire sent to agronomy departments in land-grant universities indicate a need to recruit new students into agronomy. Current agronomic enrollments are declining faster than enrollment in the colleges of agriculture. Agriculture in general is losing students despite enrollment increases in universities. Continued decline in agronomy undergraduates can reduce departmental teaching funds, force departments to eliminate courses offered, and possibly reduce faculty size. Consequently, the quality of curricula may suffer and the supply of competent agronomists may not meet the job market demand.

Many departments are developing or implementing various recruitment techniques to attract students into agronomy. Inadequate budgetary funds for departmental recruiting necessitates a recruitment plan that is efficient, economical, and productive. The results indicate that departments are concentrating efforts to recruit undergraduate students on campus rather than traveling to other colleges or high schools. Female and urban students are making up a larger percentage of undergraduate agronomy enrollments and are an important source of new students.
Recruiting techniques that have shown to be effective include strengthening introductory courses to attract new students, offering scholarships to incoming students, developing general agronomy courses to attract nonagriculture majors, and writing personal letters from department heads or advisors to students showing an interest in agronomy. The amount of money available for recruiting will dictate the direction each department takes in recruitment. Attracting an adequate number of good students is essential to maintaining quality in the agronomy discipline.

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REFERENCES


