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Teaching Non-Farm Students Introductory Field Crops

Abstract

Over 60 percent of the enrollees in the introductory field crop production course at Southern Illinois University-Carbondale (SIU-C) during the fall semester, 1975, and spring semester, 1976, had a non-farm background compared to an estimated 20 percent in 1966. Non-farm students increased to 75 percent in fall semester, 1976. Potential changes in presentation were evaluated by the SIU-C students and 74 crops instructors in the U.S. Students were almost equally divided between (a) a one credit practicum, (b) regular help sessions, and (c) supplementary self instruction exercises. Nearly one-third of the crops instructors suggested self-instruction as a solution to the non-farm background problem. Regular help sessions was the second most frequently-reported approach mentioned by the instructors.

In the last decade, the non-farm student enrollment in the SIU-C School of Agriculture has increased from an estimated 20 percent in 1966 to 51 percent in 1976 (6). Presently more than one-half of the students in the department of Plant and Soil Sciences (crops, soils, and horticulture) live in cities of at least 10,000. Women students, many of whom have non-farm backgrounds, have increased tenfold in agricultural programs in the last five years and presently make up one-sixth of the 1976 School of Agriculture enrollment of 1112 students (6). While the proportion of non-farm students in the introductory field crops course was only about 10 percent in 1967 (when the senior author began teaching this course), the proportion in fall semester, 1976 was more than 70 percent (132 total students).

Apparently, the increase in non-farm background students is not confined to SIU-C. A survey of 1975 freshmen in agriculture curricula in the College of Agriculture at the University of Illinois revealed that only 37 percent lived on farms (3). Purdue University reported that more than one-half of enrollees in the introductory agronomy course do not have farm backgrounds (1).

Such rapid changes in student background necessitates marked changes in teaching techniques and/or course content of the introductory field crop production course. A number of universities have reported alterations in course structure or curriculum to accommodate non-farm students. Vorst, Mullen, and Teigen have instituted "station teaching" in the introductory agronomy course at Purdue University (1). This approach relies heavily upon student participation and interaction in simple problems or demonstrations at eight stations.

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Each station is equipped with flats or containers of as much live material as possible. The instructors also have added extra credit exercises, enabling class members to work on some problem at the agronomy farm.

Harvey (4) reported that the University of California at Davis offers a Plant Science II course for non-agriculture students who are interested in learning about plants and how they grow. As a part of this course, the students are assigned a plot of land and allowed to plant seeds and follow plant growth and development.

At the University of Guelph, an elective course was initiated to give non-agriculture students an appreciation of the role of crops in man's welfare (5). It was effective in arousing student imagination and faculty thoughts as to the value of this and similar courses for the non-agriculture segment of our population.

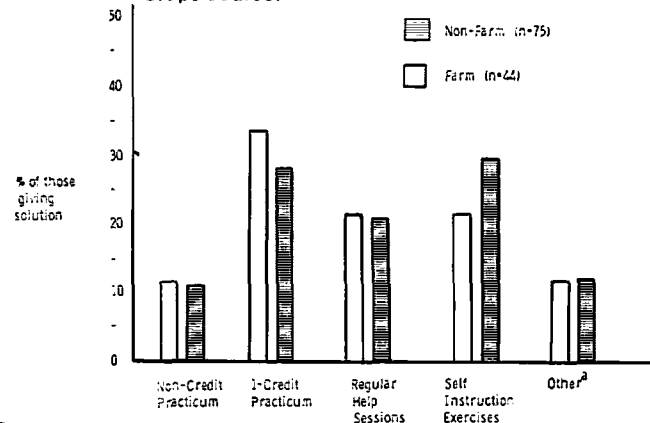
Burger and Seif (2) concluded that final course letter grades of students in introductory crop science were independent of farm experience and high school background (4-H or FFA membership and agricultural course experience), as well as sex, curriculum, college class, transfer status, or agronomy club membership. Course grade was associated more with college course credit load, high school rank, ACT score, and university selection index.

The objectives of this study were to determine (a) the scope of the problem of teaching non-farm students and (b) practical solutions to the problem if it exists.

Materials And Methods

Students at SIU-C who were enrolled in Plant and Soil Science 200, Principles of Field Crop Production, during the fall semester 1975 and the spring semester 1976, were surveyed in an effort to define non-farm back-

Figure 1 Student Solutions for Difficulties Encountered by Non-Farm Students in the Introductory Field Crops course.



^a Some response examples are: Use of different textbook, opportunity for field work, better use of overhead projector for explanations, more explanation of farm terms.

Table 1. Results of student survey in PLSS 200, Principles of Field Crop Production, in fall semester, 1975, and spring semester, 1976.

	Farm (%)	Non-Farm (%)
Student background (n=119)	37.0	63.0
Student experiences (% by background)		
Worked on farm	100.0	46.6
Visited Farm	100.0	32.0
Home town (% by background)		
Larger than 20,000	2.2	29.3
Larger than 50,000	2.2	33.3
Course Difficulty (% by background)		
No difficulty	67.5	31.0

ground problems and seek solutions. The survey was completed and returned by 58 students in the fall and by 61 students in the spring class. Chi Square statistics were computed to test the independence of the final course grade average of 126 students enrolled in the course in fall semester, 1976, and their background (farm or non-farm).

Questionnaires were mailed to crops (or plant science) instructors at 101 U.S. colleges and universities offering agriculture. The instructor survey was completed and returned by 74 who taught or directed the introductory crops or plant science courses at their institutions.

Results And Discussion

Student Surveys

Results from the student surveys are shown in Table 1 and Fig. 1. Only 37 percent of the 119 students surveyed had a farm background (Table 1). Of the 63 percent with a non-farm background, almost a third reported that they had visited farms, and nearly half reported they had worked on a farm. Over 60 percent of the non-farm students were from towns larger than 20,000 population, whereas fewer than 5 percent of the farm students lived in towns this large. More than 60 percent of the non-farm students had difficulty grasping field crop production concepts, while less than 13 percent of the farm students encountered difficulties.

Figure 1 shows the students' responses to alternative approaches of solving the non-farm background problem. Three alternatives were selected with nearly equal frequency. They were (a) offer a one-credit practicum course for non-farm students, (b) schedule regular help sessions, and (c) supply self-instruction exercises as a supplement to the regular lectures and laboratories.

Grade data are not available for students mentioned above, but this information was obtained for 126 students enrolled in field crop production in the fall semester, 1976. There was no significant difference in course grade average between farm and non-farm students, with both groups compiling a C+. Farm students (n = 36) made an average grade of 2.39 (A = 4.0) and non-farm students (n = 90) averaged 2.38. Non-farm males (n = 58) compiled an average of 2.29 as compared to a 2.53

grade for non-farm females, a difference that was significant at the 5 percent level.

While most grade comparisons between background groups were similar, grade averages did not reflect all problems that non-farm students encountered in this course. The authors observed that students without a farm background struggled with terminology and with obtaining background information. In short, it was necessary for this student group to spend considerably more time on such activities as outside reading and private conferences with the instructor.

Instructor Surveys

Of the 74 crops instructors responding, more than 95 percent offered an introductory field crops or plant science course at the freshman or sophomore level (Table 2). This course is a three semester hour course at more than 50 percent of the colleges or universities and a four-credit course at a third of these institutions.

Almost a third of the instructors reported that they had more than 50 percent non-farm students in this introductory course, and two thirds of the instructors have more than 30 percent non-farm students. Thus, nationwide the non-farm student is an important segment of the introductory crop production or plant science student population.

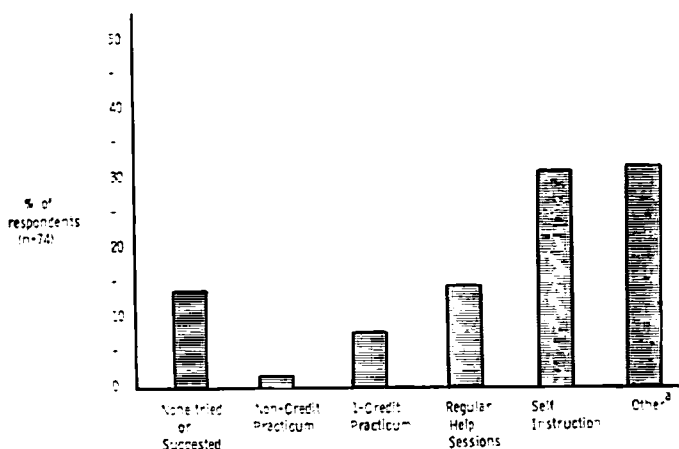
The instructors at more than 44 percent of the schools perceived that their non-farm students had more difficulty than those with a farm background. Only 10

Table 2. Results of instructor survey regarding the introductory crops (or plant science) course.

	% of Universities Sampled		
Level of introductory crops course			
Freshman			65.9
Sophomore			30.5
Junior/Senior			3.6
Semester hour credits of the introductory crops course			
Two			5.6
Three			55.5
Four			33.3
Five			5.6
Students with non-farm background			
Less than 10%			9.5
10 to 30%			24.3
30 to 50%			35.1
More than 50%			31.1
Non-farm students who had difficulty with the introductory crops course			
	Eastern US ^a	Remainder of US	Total US
Had difficulty	10.0	50.0	44.4
No difficulty	60.0	33.9	37.5
No information	30.0	16.1	18.1

^a States of CT, MD, NH, NJ, NY, PA, RI, and VT

Figure 2 Instructor Solutions for Difficulties Encountered by Non-Farm Students in the Introductory Field Crops Course.



^a Some response examples are: Instituting of plant science course, more "hands on" instruction, greater use of films and slides, more emphasis on principles, encourage students to gain farm experience, more field trips.

percent of the instructors in the Eastern United States noted that their non-farm students had difficulty, whereas 50 percent of instructors in the remainder of the United States observed this difficulty.

Eastern universities and colleges encountered the problem of teaching agriculture to urban students many years ago. Responses from agronomy instructors in these Eastern states indicated that most have instituted a plant science course to replace the classical field crop production course. This may remove a possible farm background advantage. In fact, several eastern U.S. instructors commented that their non-farm students perform at a higher level because they frequently have a better background in biological and/or physical sciences.

Nearly one-third of the respondents who offered instructional solutions for non-farm student difficulties suggested supplementary self-instruction exercises (Fig. 2). About 15 percent suggested regular help sessions, while about 13 percent had not tried any solution or did not offer a solution. Fewer than 10 percent felt that some type of practicum course for non-farm students was necessary or a practical solution.

Summary

Several institutions indicated that the proportion of non-farm students in agronomy, as well as the agricultural sciences as a whole, is increasing rapidly. Most of the instructors surveyed, excluding those from the Eastern U.S., perceive that non-farm students had more difficulty grasping concepts in the introductory agronomy course. Most instructors indicated that some modification in method of presentation or course content is desirable or has been instituted. The change may be envisioned as a practicum course, regular help sessions, supplementary self-instruction exercises, or conversion to a plant science course. While crops instructors might not agree on which solution to institute, the classical "how

to" crop production course offered to "farm kids" must be modified and our teaching techniques altered to reflect the change in class composition. Instructors must be willing to change in such a way as to offer adequate instruction to our students who come from that 95.5 percent segment of our U.S. population.

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To be eligible for nomination, an individual must be a NACTA member (Active or Institutional) and have ten years or more service to post-secondary education in agriculture. Evidence of meritorious service to post-secondary education in agriculture through NACTA, teaching, educational research, or educational administration should be presented along with the nominee's name.

Nominations must be received no later than September, 1977.

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