

## College Agriculture Courses in Utah High Schools

Guy W. Denton, Weldon S. Sleight, and Keith Smith

### Abstract

For the past two years, the College of Agriculture and the Department of Agricultural Education at Utah State University have conducted a pilot concurrent enrollment program in Utah high schools. The major objectives of the study were to:

1. improve the image of agriculture at the high school level;
2. improve the quality of agricultural instruction in high school agriculture programs; and
3. recruit "science type" students into the high school agriculture program and eventually to the College of Agriculture at Utah State University.

To date, 348 high school students have completed one of three 100-level college courses, have been in contact with a College of Agriculture professor, and have received a university transcript posting the credit received from the concurrent enrollment program.

### Introduction

What is the future role of Colleges of Agriculture? In the past 10 years, enrollment in these colleges has declined almost 30 percent. Utah State University's College of Agriculture experienced an 18 percent decrease in enrollment from 1982 to 1986 (Sleight, 1989). This national decline has occurred even though the demand for qualified agricultural graduates exceeds the supply. Coulter, Stanton, and Goecker (1986) reported that only 11,600 agricultural graduates were available for 13,918 employment opportunities for agricultural scientists, engineers, and related specialists. More than 1,000 positions for agricultural managers and financial specialists and 3,000 positions for agricultural marketing, merchandising, and sales representatives were not filled.

The decline in enrollment has been accompanied by a steady decrease in the academic scores of entering freshman and graduate students majoring in agriculture. From 1978 to 1985, the Scholastic Aptitude Test (SAT) scores of high school graduates planning to major in agriculture declined 28 points; SAT's for all disciplines increased by 9 points. Likewise, the mean Graduate Record Examination (GRE) scores of entering graduate students majoring in agriculture declined by 12 points; the GRE scores of students entering other disciplines increased (Resident Instruction Committee on Organization and Policy-RICOP, for the National Association of State Universities and Land-Grant Colleges-

Denton is a specialist, International Programs, College of Agriculture, Utah State University; Sleight is an assistant dean, Resident Instruction, College of Agriculture, and head, Department of Agricultural Education, Utah State University; and Smith is associate director, Cooperative Extension Service, Ohio State University.

NASULG, 1986).

In an effort to reverse declining enrollment and thereby stop further reallocation of resources from the College of Agriculture to other colleges within the University, the Dean's Office and the Department of Agricultural Education developed an agricultural concurrent enrollment program. The program was funded by the Agricultural Experiment Station.

### Agricultural Concurrent Enrollment

Concurrent enrollment allows academically advanced students to enroll in college courses while still in high school (Wilbur and Chapman, 1978). Our program allowed high school juniors and seniors to receive both high school and college graduation credit for the same course. The courses are taught by high school agriculture instructors who attend an intensive in-service program conducted by college administrators and the appropriate professors. The in-service program addresses subject matter and teaching methodology.

Providing agricultural "honors" courses at local high schools may achieve the following outcomes:

- ◆ Improve the "image of agriculture" in the minds of college-bound high school students.
- ◆ Improve the instruction level in local high school agricultural programs.
- ◆ Recruit "science type" college-bound students into local high school agricultural programs and eventually to the College of Agriculture at Utah State University.

### Program Development

#### Course Selection

The following three 100-level College of Agriculture courses were selected for a pilot program: *Introduction to Agricultural Plant Science* (PISc 100); *Fundamentals of Agricultural Mechanization* (AgEd 101); and *Animal, Dairy, and Poultry Science* (ADVS 111).

#### Teaching Resource Materials

Teaching materials for each course were developed by a graduate student who worked with the appropriate professor. The graduate students, who were enrolled in the Agricultural Education Department, attended the course lectures to facilitate their understanding of the course and reviewed existing course materials. Detailed lesson plans with student objectives, visual aids, student activities, and evaluation materials were prepared for each college course.

#### High School Agriculture Teacher Selection

Criteria were determined for the selection of the high

school agriculture teachers who would participate in the program. It was important to select capable high school teachers who had access to adequate facilities. The following criteria were used in teacher selection:

- ◆ Teachers must have taught for a minimum of three years and for at least one year at their current high school.
- ◆ Facilities and supplies must allow adequate learning experiences in the classroom and laboratory.
- ◆ Teachers must attend a three-day in-service program.
- ◆ Teachers must be willing to have College of Agriculture representatives visit their local programs during the course for course support and evaluation.
- ◆ Teachers must be willing to use the approved college course instructional and evaluation materials.

## Concurrent Enrollment Program Model

### Model Development

College of Agriculture faculty wanted to maintain the integrity of the college course. To address this and related concerns, the following model was developed for the Concurrent Enrollment Program:

1. Course syllabi, prepared by college faculty, will describe the course content and grading policy.
2. College of Agriculture faculty will visit each concurrent enrollment course offered in the high schools at least once.
3. High school teachers will be given answer keys to all assignments, quizzes, and examinations except for the final examination. All evaluation materials are to be returned to the appropriate college professor after grading.
4. The final examination will be prepared by the college professor and administered by the local County Extension Agent. The Agent will send completed examinations directly to the college professor for grading. The high school teacher will not see the final examination before it is given.
5. Any high school agriculture teacher whose students' total mean score on total points is not at least 70 percent will not be allowed to teach concurrent enrollment courses.

The college professor used the same criteria to assign grades to both the high school and college students because the same course materials and examinations were used.

### Administration of the Model

During the last two years, 348 high school students have received 1,484 college credit hours in the College of Agriculture. As more high school programs become involved, the program should be institutionalized within the College of Agriculture. Development funds provided by the Agricultural Experiment Station must be replaced with funds generated by the increased student credit hours.

A full-time program coordinator is now needed to represent the Dean's Office because the program involves every department in the College of Agriculture. The program coordinator would:

1. Coordinate the development of concurrent enrollment courses.
2. Promote the program to college faculty, high school administrators, and students.
3. Coordinate student registration and collection of tuition and secure course materials.
4. Act as liaison between the College of Agriculture, academic departments, high schools, and the general public.

## Major Outcomes

Besides the increase in student credit hours for the college, the program has several other benefits. Nontraditional agricultural students are enrolling in the high school agricultural programs. Some agricultural teachers have taught *Introduction to Agricultural Plant Science* as the high school biology honors course. This course also fulfills a general education life science requirement at Utah State University.

Several high school agricultural teachers feel the program has helped them regain some of their top students. In recent years, many high school counselors have advised most college-bound students to limit the number of agricultural courses in high school. Many counselors now view concurrent enrollment courses as an excellent alternative for college-bound high school students.

Personal contact by faculty members and receipt of an official USU transcript of credits have encouraged high school students to select these courses. Efforts are also being made to alert students enrolled in the program to the many challenging careers in agriculture and the educational opportunities Utah State University can provide.

## Program Sustainability

### College of Agriculture Faculty

Faculty must feel that the time and effort expended in the program assists their departments and the College. They devote a considerable amount of time developing unit and daily lesson plans. They also evaluate high school student assignments and tests, visit participating high schools, and conduct in-service workshops.

The College should provide incentives for participation in the program, which should include a funded graduate assistant and release time from some of their other responsibilities.

### Graduate Assistants

Graduate students participating in the program generally have high school teaching experience and training in a particular subject matter. The teaching experience usually includes curriculum design, which was invaluable in the development of introductory courses. The teaching experience also facilitates liaison between the university and the high schools.

### High School Agricultural Teachers

The high school agricultural teachers are the key to success. The preparatory in-service program stresses that participating in the program will require additional time to prepare for a successful course. The integrity of the program requires that high school instructors understand that the college professor is ultimately responsible for course content

and evaluation.

If possible, qualified high school agricultural teachers should be granted adjunct faculty status in the College of Agriculture. College faculty members should provide regular support. This relationship will foster joint "ownership" of the program between high schools and the College of Agriculture.

### High School and District Administration

High school and district administrators must be contacted by the program coordinator before the program begins to explain the objectives of the program. Principals' advice should be solicited (e.g., the ability of agriculture teachers to teach honors courses and the adequacy of necessary facilities and finances).

### High School Students and Their Parents

Agriculture teachers can help high school students improve their study skills. The instructors are encouraged to incorporate these materials in the first week of instruction and to review study skills during the course. The parents of student participants should understand the objectives and financing of the program. Participation can reduce the overall cost and time required for a college education. Most high school students registered for the college course (through the University's Continuing Education Division) pay only \$11.25 per credit hour.

### School Calendars

Utah State University is on a quarter system; while most Utah high schools are on either a semester or trimester system. This means that the agricultural teachers have increased the instruction time from 10 weeks to approximately 14 weeks. The length of the courses must increase to accommodate extra-curricular activities. The added days also allow for more study time.

## Summary

Colleges of agriculture must change their educational approach to accommodate changes in agriculture and student enrollment. Students capable of meeting the increasing demands of an agricultural career must be attracted.

The Concurrent Enrollment Program developed by the College of Agriculture at Utah State University allows high school students to enroll in agricultural college courses for high school and college graduation credit. The program has increased the number of student credit hours generated by the College of Agriculture and the enrollment in high school agriculture courses.

The concurrent enrollment program has attracted more college-bound students to agricultural programs. It is hoped these students will enroll in College of Agriculture programs at Utah State University. Follow-up studies of the program participants are planned to evaluate this and other outcomes of the program.

## Bibliography

Coulter, K.J., Stanton, M., and Goecker, A.D. (1986) *Employment opportunities for college graduates in the food and agricultural sciences: Agriculture, natural resources, and veterinary medicine*. College Station, Texas: Texas A & M University.

National Association of State Universities and Land-Grant Colleges. (1986) *The bottom of economic profitability and scientific excellence is*

*expertise*. (Pamphlet) Resident Instruction Committee on Organization and Policy: Resident Instruction Section, The Division of Agriculture.

Sleight, W. (July 11, 1989) *High school agriculture: Is it important to Colleges of Agriculture throughout the nation*. Speech presented to College of Agriculture Deans at Colorado State University, Fort Collins, Colorado.

Wilbur, F.P. and Chapman, D.W. (1978) *College high school: College courses in the high school*. Reston, Virginia: National Association of Secondary School Principals.

# INSTRUCTIONAL MEDIA REVIEWS

Victor A. Bekkum, Chair  
NACTA Instructional Media Review Board  
Agricultural Engineering Department  
Iowa State University  
Ames, IA 50011

*Healthy Plants -- Our Future*. By Blanche C. Haning and C. Lee Campbell, North Carolina State University.

*Healthy Plants -- Our Future* is a 21 minute videotape. It is intended for grades 8-12 and introductory college courses as well as community groups. The objectives of the videotape are to describe the roles of plants in nature, the discipline of plant pathology and career opportunities for phytopathologists. *Healthy Plants -- Our Future* was authorized by the American Phytopathological Society and plans include the making of the tape into a 16mm film.

## Review Summary

The media reviewers all felt this videotape was professionally done. They all felt it accomplished very well the objectives that were established.

The graph below presents the average rating of the reviewers.

	Excellent	Good	Fair	Poor
Picture Quality	X			
Sound Quality	X			
Editing	X			
Content		X		
Currentness			X	
Organization	X			
Accuracy	X			
Vocabulary	X			
Interest			X	
Technical Quality		X		
Overall (Average of Reviewers)		X		

## Summary Remarks

### Contest Panel Member

This videotape was very well done. It should be an excellent addition to an introductory study on plants and plant diseases. The viewer has a much better understanding of the importance of healthy plants in our society.

Leon G. Schumacher  
Assistant Professor  
North Dakota State University

### General Panel Member

A professionally done video-tape which should be valuable in explaining what a phytopathologist does and the importance of this work. I would like to strengthen its appeal by changing the music and overall tempo. A very useful video which could be enhanced by developing some printed material to accompany it.

Douglas A. Pals  
Professor Ag & Ext. Education  
University of Idaho

## Availability

The videotape "*Healthy Plants -- Our Future*" is available from the American Phytopathological Society, 3340 Pilot Knob Road, St. Paul, MN, 55121. The cost of the videocassette is \$29.95.