Survey of Graduates

In a follow-up analysis of 200 graduates from 1967 through 1972 concerning their present employment, tenure, beginning salary, and an evaluation of the educational program of UNSTA, the following information was revealed:

Forty-five percent or 90 graduates are still employed in the same job they accepted upon graduation. This is similar to national figures on beginning job employment. Fifty-five percent have advanced in or changed their employment. Twenty-eight percent of the graduates accepted their present employment because of its potential advancement opportunities.

The average beginning salary for those graduated surveyed was $625 monthly or $7,500 annually. A monthly salary analysis is as follows:

Salary	Number Reporting	Percentage
$300 to $499 per month	60	30%
$500 to $699 per month	76	38%
$700 to $899 per month	40	20%
$900 plus per month	24	12%

Seventy-seven percent of the 200 graduates felt that UNSTA's program of technical agricultural education had adequately prepared them for their positions.

Many Benefits

UNSTA derives several distinct advantages because it is directly associated with the University of Nebraska-Lincoln. It has a broader economic base on which to obtain financial resources; the expertise of the several colleges and departments within UN-L structure are available for its utilization; and purchasing through UN-L provides an additional economic benefit. The construction of new facilities and/or the remodeling of existing facilities progresses with a greater degree of efficiency due to the long range planning techniques utilized by the UN-L Physical Plant department. The UNSTA faculty is on a salary schedule and has equivalent academic rank with the UN-L faculty. All fringe benefits are equally applied to each faculty.

The students gain considerably as they attend a "state" agricultural technical school. Students feel status is an additional benefit of being part of the total university system. The interchange of ideas, habits, and goals of students from the four corners of Nebraska aids in the students' total education as it definitely assists them in appreciating other personal points of view and thus developing their skills in basic human relations.

UNSTA was accredited as a branch of the University of Nebraska-Lincoln during its embryonic stage of development. The Veterinary Technology Department was accredited by the American Veterinary Medical Association in 1973. UNSTA received full accreditation from the North Central Association of Secondary Schools and Colleges in 1975.

The accomplishments of the basic goals of UNSTA and the meeting of the needs of the agri-industry in Nebraska are illustrated in the near full employment of its graduates and the continual request for more graduates. Perhaps the most important by-product of UNSTA's program of technical agricultural education is a better versed farmer or rancher and the higher caliber of individuals in our ag-related industries. These individuals will be earning, investing, and spending more money as well as time and effort in improving Nebraska's total economic picture. Thus the total economy of the state will be enhanced as well as providing better agriculturally orientated services for all Nebraskans.

"Plants for Man," An Economic Plants Course

Donald J. Stucky

Abstract

A course offered at Southern Illinois University exposes students to the importance and influence which plants impose upon their lives. An abundance of information is available for presentation in a course on Plants for Man. Several areas which could be emphasized are suggested. The topics in the course, discussed in detail, examine the relationship of plants to man's health and well-being. Several potential textbooks are listed. The advantages of short televised modules specifically developed for the course are presented.

The Plant and Soil Science Department at SIU-C offers a course which presents an opportunity for students to discover and appreciate the impact that plants have on their lives. Information presented in this course is designed to appeal to a broad spectrum of students, particularly those from urban areas. As more and more of our population is concentrated into metropolitan centers, fewer people will be aware of the influence and importance exerted by plants on their lives. The course, Plants for Man, may be structured in several ways emphasizing different aspects of the influence of economically important plants on man. A botanical theme may stress the varied and interesting morphological features of plants. Or emphasis could be placed on plant growth and production. A third possibility would be a thorough examination of the processing and utilization of economically important plants. A fourth alternative might probe the relationship between plants and man's health and physical well-being.

Stucky is associate professor, Plant and Soil Science Department, Southern Illinois University, Carbondale, Illinois 62901.

The majority of material presented in the course offered at SIU-C deals with the fourth option, but it also includes information from the second and third areas.

Course Structure

Table I presents the five major categories and the lecture topics within each category of the course at SIU-C. Following are summaries of material covered in each major category.

Table 1. Major Categories and Lecture Topics Within Each Category for the Course Plants for Man

Major Category	Lecture Topics
Current Perspective	
	Man-Food and Healthful Living
	Food Resources
Plants from a Geographical and Historical Viewpoint	
	Nutrition
	Carbohydrate Food Sources
	Lipid Food Sources
	Protein Food Sources
	Vitamin and Mineral Food Sources
Plants Featured for Plant Products	
	Medicinal and Drug Plants
	Beverage Plants
	Plant Fibers
	Plant Latex
	Forest Products
Plants Featured for Beauty	
	Horticulture Plants

Current Perspective

The introductory section presents the foundation for subsequent discussions. Specifically it accentuates the necessity of plants which determine the state of man's health and well being. From a nutritional viewpoint, it analyzes current world malnutrition problems as well as problems precipitated by excess consumption of food. Also, in light of the world's increasing population, the sources available to man to increase his food supply and improve his diet are examined.

Plants From A Geographical And Historical Viewpoint

This section concentrates on how plants evolved and their early influence on man. Wheat is used as an example to illustrate some of the methods that nature and man, through plant breeding, have utilized in plant development. In addition, lecture time is devoted to the geographic origin of plants, their current centers of production, and some of the reasons why the centers of origin and the current areas of production differ. Another lecture examines the geographic-historical development of plants from Mesopotamia through the great explorations of the fifteenth and sixteenth centuries which were stimulated by the search for herbs and spices.

Plants Featured For Food Supplies

Plants featured for food supplies is the first of three sections which examine utilization of plants. It is introduced with several lectures on nutrition. This brief exposure acquaints the student with essential categories of foods, their chemical composition, and the role of and requirements for energy. Next, plants are grouped according to their contribution as sources of carbohydrates, lipids, proteins, vitamins, and minerals. For example, wheat, corn, rice, and sugar are examined in the carbohydrate category. Soybeans are discussed in both the lipids and protein categories. In addition, time is devoted to texturized proteins and to the unexploited potential that fungi have for producing protein. Because of rising meat prices, the lecture discussing the role of legumes, including the broad categories of beans, peas, and peanuts, is very well received by students.

Plants Featured For Plant Products

This group is the most popular of the five major categories. Those plants which have provided man with products other than food are examined. Particularly appealing is the area of medicinal and drug plants. Students are exposed to the amazing story of the mandrake as well as the current importance of digitalis and penicillin. In addition, the students are interested in discussions of tobacco, marijuana, and opium. The discussion of plants emphasizes those which provide man with the basic ingredients of coffee, tea, colas, and wine. It also examines the production process of other alcoholic beverages. Since the topic of forest and forest products is extensive, the number of lectures can be easily expanded or decreased. In one period the student receives a general overview of forests and information about the walnut, the species receiving the most research attention from the local USDA Forest Service Laboratory. The areas of plant fibers and latex are intriguing because petroleum-based products have superseded many natural products. However, because the current petroleum situation has resulted in limited supplies initially and probably long-term price increases, the students should be alerted to the possibility of a resurgence of natural products.

Plants Featured For Beauty

The last group of plants examined are the horticulture plants (excluding vegetables). They have become a very important industry in the United States often viewed as a "necessary luxury." This is accentuated by the fact that people can now use food stamps to purchase certain horticultural products. In this section, students have an opportunity to visit a campus greenhouse and the SIU-C herbarium.

This course is offered for two hours of credit under the semester system. Two lecture periods are devoted to the **Current Perspective** category, two to the **Plants from a Geographical and Historical Viewpoint,** twelve to the **Plants Featured for Food Supplies,** nine to the **Plants Featured for Plant Products,** and three for the **Plants Featured for Beauty.**

Course Flexibility

As one may surmise from the above discussion, the course offers a range of flexibility in three areas. The first is in choosing one of several options for course emphasis. The second concerns the course material within the option, and the third is the method of teaching.

Several universities have offered courses which stress botanical aspects. Generally these are offered in botany departments and emphasize economically important morphological structures, family relationships, scientific names, etc. But such a course lacks the broad student appeal which other options have. One of the advantages of the growth and production option is that so many crops have interesting and contrasting cultural requirements which could intrigue a wide spectrum of students. The differences in growth and production methods of crops in the United States are quite varied, such as peanuts vs. corn vs. grapes, and there are additional variances throughout the world. Also, one could contrast different cultural methods in developed vs. under-developed countries. A third offering might stress processing and utilization of important economic crops. Many employment opportunities are available to agricultural graduates in the agricultural processing industry, and there is a definite void in course offerings which expose students to this area. A course emphasizing this option could provide the student with a knowledge of the opportunities available in this area of employment. Another major category of material that may be discussed is agronomy and the environment. It is a timely subject; however, it is not covered in this course because it is included in other university courses.

This class also presents an ideal forum for team teaching. One of the requirements for successful instruction is a teacher with broad interests and knowledge. Often such an individual is not available; therefore, a potential solution is to have more than one individual teach the course. This approach was utilized one term at SIU-C. One botanist and two agronomists participated. It was successful; however, alternative demands on the professors' time precluded continuation of that format. One might utilize guest lecturers whose interests and expertise are in areas in which the instructor's knowledge is limited. A disadvantage is that if the course is offered frequently it may be inconvenient for the guest lecturer to be available. This can be avoided by the use of short telelectures which are discussed later.

Textbooks

There are at least four texts which could be utilized in the course. They are:

1. Schery, R.W., 1972, **Plants for Man,** Second Edition, Prentice-Hall, Inc.
2. Janick, J., R.W. Schery, F.W. Woods and V.W. Ruttan, 1969, **Plant Science,** W.H. Freeman and Company.
4. Heiser, C.B., 1973, **Seed to Civilization,** W.H. Freeman and Company.
4. Baher, H.G., 1970, **Plants and Civilization,** Second Edition, Wadsworth Publishing Company, Inc.

This course uses **Plants for Man** by Schery. It is well written and discusses most of the topics offered. But it contains too much material to cover in two terms, and it is an expensive book which students are reluctant to purchase. The same criticism applies to **Plant Science. Plants and Civilization** and **Seed to Civilization** have approximately 185 and 243 pages, respectively, and are available in paperback editions. They are limited in scope but well written, easy to read, and less expensive than the other alternatives. A prospective instructor should review all four texts prior to selecting one.

Visual Aids

This course evolved from one which was taught exclusively via a series of telelectures. They had been developed during the 1960's when the idea of reaching many students through television was a popular concept. The concept never achieved its anticipated goals, and instructors involved in the course gradually abandoned many of the telelectures, replacing them with lectures and short televised modules. These modules ranged from 15 to 20 minutes in length and were developed by Dr. Herbert Portz, a professor in the Plant and Soil Science Department and Dr. Donald Ugent, Associate Professor of Botany. Topics covered in this manner are corn genetics and breeding, large fruit genetics and breeding, the floriculture industry, the evolution of the potato, and the evolution of wheat. These short modules are shown during the lecture period and then in the remaining time the lecturer either elaborates on their contents or presents other relevant information. The modules expose students to knowledge from a specialist and allow the class to receive information by a different method, thus adding the important element of variety. Several of these modules are still utilized and they, with selected short films, slide sets, and overhead transparencies comprise the bulk of the current package of visual aids. One telelecture on fungi and protein has been retained because of its outstanding quality and continues to be well received by the students.

Summary

The course, Plants for Man, offers the agronomist the opportunity to expose urban students to the important role that plants exert on their daily lives. It also broadens the perspective of agricultural students. The course material is covered in five major categories. These categories are (1) **Current Perspective,** (2) **Plants from a Geographical and Historical Viewpoint,** (3) **Plants Featured for Food Supplies,** (4) **Plants Featured for Plant Products,** and (5) **Plants Featured for Beauty.** There is an abundance of material which can be presented;

therefore, the instructor has a great deal of flexibility in the subject matter he wishes to present. He may emphasize topics in four different options. One is a botanical-morphological emphasis. Another is the growth and production area. A third alternative emphasizes crop processing and utilization, and the fourth deals with the relationship between plants and man's health and physical well-being. The extensive range of material affords an opportunity for team teaching. Individuals interested in different aspects could concentrate their efforts in their areas of specialization. This paper also describes some advantages and disadvantages of relevant textbooks and points out advantages associated with short televised modules which were specifically developed for this course.

Preparing Graduate Students For Instructional Roles

M.G. Hale, L.D. Moore, and D.M. Orcutt

Abstract

An innovative, one credit course was used to introduce graduate students to activities in which they will be involved as teaching assistants and future instructors in higher education. Success of the experiment was related to the smallness of the group and free and open discussions in managed teaching-learning situations. A bibliography of appropriate readings on teaching is identified.

Several articles and speeches have recently dealt with the instructional maladies prevalent on college and university campuses. One in particular on "Higher Education's Commitment to Instructional Development" by W. James Popham (24), strongly suggests that most administrative attempts to improve instruction are totally inadequate and often rhetorical rather than real. Popham suggests that professors lacking in instruction effectiveness be cycled through some university or college program designed to prepare the individual more adequately for an instructional role. The resultant improved instruction might lead to better student learning.

Popham's views are undoubtedly shared by many; however, we feel that as much or more emphasis should be placed on instructional development of potential faculty while they are graduate students. The preparation of the college or university teacher enabling him or her to use creativity to the fullest extent in teaching-learning situations has been neglected. An attempt to develop graduate students as future college teachers was undertaken in the Department of Plant Pathology and Physiology with the help of a teaching grant from the Special Academic Programs at Virginia Polytechnic Institute and State University.

M. G. Hale is Associate Professor of Plant Physiology; L. D. Moore is Associate Professor of Plant Pathology; and D. M. Orcutt is Assistant Professor of Plant Physiology, Department of Plant Pathology and Physiology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061.

An experimental course, **Creativity and Innovation in Plant Physiology Instruction,** was conducted during the spring quarter of 1975. The course was designed to give graduate students some insight and confidence in handling teaching-learning situations in higher education and also to use their input for course revisions within the department.

Patricipants And Course Methodology

Eight graduate students and three professors participated in the course. Four of the graduate students were Ph.D. students and four M.S. students. Four of the students were majoring in plant physiology and four in plant pathology. The professors were a plant pathologist with a strong physiological orientation and two plant physiologists. The course was conducted as much as possible as an open discussion with all three professors serving as managers of learning of specified lesson plans and all students serving as managers of learning in role-playing situations. Teaching aids used in lesson plans were left to the discretion of the manager of learning but with some design toward introducing a variety of aids. No written examinations were given in the course, which was pass-fail. Instead, evaluation of students was based on discussion, completion of assignments, and application of principles to revision of physiology core courses. Each session was evaluated by the students and faculty.

Three educational goals were expressed by the faculty involved and accepted by the students:

1. To prepare graduate teaching assistants (GTA's) for their role in instruction programs and as future faculty who may be involved in instruction.
2. To improve student learning by (a) enhancing the teaching effectiveness of faculty and GTA's and (b) improving and better coordinating course content.
3. To evaluate efficacy of the approach to course development and improvement.