

IMPROVING COLLEGE TEACHING

In Agronomy

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INTRODUCTION

Being the first speaker in a session to be devoted largely to the improvement of instruction, I find myself somewhat in a similar position to the "lead-off man" in a baseball game. I am expected to set the stage for a favorable inning, consequently my presentation will naturally include some basic ideas that are equally related to other areas of instruction.

Education is a process of mental development that normally begins with birth and ends only with death; and it results in knowledge, abilities, and attitudes which govern man's code of action in relationship to the natural environment, his fellow-man, and with his Creator. The teacher plays a vital roll in the educational processes; one's success as a teacher is measured, to a degree, by the success of his former students.

Training in Agronomy, like that of other areas of agriculture, requires the combined application of many disciplines as they relate to human interests and needs. Adequate professional training in any area of agriculture is not a simple or easy task to pursue, and it can not be satisfactorily acquired during the time normally allotted to the undergraduate curriculum; therefore, each teacher must find a way to kindle that dormant spark of intellectual curiosity possessed by most students if he is to justify the time students are required to attend his classes.

OBJECTIVES OF AGRONOMIC INSTRUCTION

I would like to list the following objectives for effective agronomic instruction, and I believe they apply equally well to other fields of learning:

1. To receive the student as he is, with his limitations in interest, knowledge, and skills; to guide and assist him in becoming a person with a reasonable understanding and the ability to apply agronomic principles to the problems of his every-day life, regardless of what occupation he may follow. It is neither desirable nor possible to make agronomists of even a majority of the students enrolling in most courses of agronomy.
2. To provide educational experiences considered essential in the development of knowledge, abilities, and attitudes preparatory to employment in the chosen career and for responsible citizenship. Some of the human factors that tend to make for success in a career seem worthy of mention:
 - a. The ability to work harmoniously with others toward a common goal.
 - b. The capacity to think creatively in a cooperative setting.
 - c. The willingness to listen understandingly to the opinion or point of view of others.

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In Animal Sciences

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The Department of Animal Sciences will offer two options beginning with the 1965-66 school year. These will include (1) **The Animal Science option** designed for students interested in animal agriculture and business enterprises allied with the production of animals and animal products and (2) **The Animal Food Science option** designed to prepare students in the procurement, processing and marketing of meat, poultry and dairy products.

Students selecting the Animal Science option will be prepared as scientists or specialists to work in the production of meat, milk, eggs and other products. This program of study is built around a core of basic courses which will provide fundamental information, both technical and scientific, common to all farm animals, including beef, dairy, poultry, sheep and swine. Sufficient electives are available to allow a student, with the help of his counselor, to provide a depth of knowledge in additional areas. Careers, both at home and abroad, are available in the production and improvement of farm animals. Allied industries related to animal production, including the manufacture of feed, machinery and equipment and the production of vaccines, drugs and feed additives offer many excellent opportunities for advancement. Banking and credit institutions, and advertising and promotion companies provide attractive careers for specialists in animal agriculture. Students who complete a specified program of advanced study may qualify for responsible positions in teaching, extension and research in industry and in universities.

Students selecting the Animal Food Science option will be trained in the chemistry, bacteriology, processing, packaging and distribution of meat, poultry and dairy products. The nutritive value of these products and the state and federal regulations pertaining to their production, processing and distribution will be stressed. Careers in this area include management and executive positions in new product development, quality control, food engineering, merchandising, sales, public health, sanitation, inspection, food preservation, public relations and work for trade associations.

Graduates also will be prepared to work in the fields allied with the animal food industry, such as those furnishing equipment, cleaning materials, chemicals and packaging materials and in publicity and advertising services.

The only major change in the Animal Science curriculum is the addition of a required three credit course in animal food products. This increases the basic core of required courses from 32 to 35 credits. The plan of study may be summarized as follows:

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countries dollar sales of U. S. farm products go up 21%. This compares with only a 14.2% increase in the developed countries. In other words, as income goes up, less-developed countries increase their imports of U. S. farm products much faster than does the industrialized West, and most of the increase is in dollar sales. If per capita income in less-developed countries increased only \$100 per person, they would likely import over \$3 billion worth of U. S. agricultural products a year or about double the \$1.5 billion we now export to them.

Our own knowledge and understanding has been broadened immeasurably. Hundreds of farm families have been

"trainers" as well as hosts. Questions have been answered for our children—what do others think, how they live, geography, customs, world affairs, etc.

In terms of higher education here in the United States, we feel that it has:

- a. Broadened the educational facilities and increased the enrollment of foreign students in agricultural colleges in the U. S.
- b. Broadened the outlook and curriculum of U. S. agricultural colleges. Examples: Increased number of courses in "World Agriculture."
- c. Brought new agricultural concepts, ideas and technical information to U.S. agricultural colleges—many

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of an administrative, policy, research, teaching methods and instructional nature.

- d. Helped immeasurably in establishing relationships and arrangements for a continuing exchange of agricultural information between institutions of higher learning in this country and abroad.

As President Johnson has said, we are proud of our American agriculture, with its record of success which contrasts so sharply with agricultural failures of the Communist countries. We must use our technical skills to assist the less-developed countries to strengthen their ability both to produce and to support rural development.

Animal Sciences Curriculum — (Continued from Page 37)

I. Required of all students in the School of Agriculture	
Mathematics (College Algebra and Trigonometry)	6 Credits
Chemistry (6 credits of inorganic and 4 credits of organic)	10 credits
Physics	4 credits
Botany	4 credits
Zoology	4 credits
Communications (including English and Speech)	15 credits
Business and Economics	6 credits
Freshman Agricultural Electives	9 credits
Military Training (2 years)	8 credits
Sub-total	66 credits
II. Required of all students majoring in the Animal Sciences	
Biochemistry	4 credits
Microbiology (Bacteriology)	4 credits
Genetics and Animal Breeding	6 credits
Animal Nutrition (Feeds and Feeding plus ruminant or monogastric nutrition)	6 credits
Physiology (basic physiology plus physiology of Reproduction, lactation or environmental)	6 credits
Animal Production and Management (Beef, Sheep, Swine, Dairy or Poultry Production)	6 credits
Animal Products (Meat, Poultry or Dairy products)	3 credits
Sub-total	35 credits
III. Electives—for training in other fields and specialization in the Animal Sciences or other Agricultural areas.	
Non-Agricultural (humanities, social sciences, etc.)	12 credits
Free electives (Agricultural or otherwise)	23 credits
Sub-total	35 credits
Total required for graduation	136 credits

Animal Food Science Option

I. Required of all students in the School of Agriculture		(See Above)
II. Required of all students majoring in Food Technology		
Analytical Chemistry	4 credits	
Food Evaluation	3 credits	
Food or Dairy Microbiology	4 credits	
Food Preservation	5 credits	
Food Processing Equipment or Dairy Plant Equipment	3 credits	
Food Chemistry	4 credits	
Food Plant Sanitation	3 credits	
Food Technology Seminar	1 credit	
Sub-total	27 credits	
III. Electives—for training in other fields and further specialization in Animal Food Science or Food Technology		
Non-Agricultural (humanities, social science, business, etc.)	12 credits	
Free electives	31 credits	
Sub-total	43 credits	
Total required for graduation	136 credits	

Animal Food Science Option

The Animal Food Science option is a new option. It encompasses the Dairy manufacturing curriculum previously offered and includes courses in meat and poultry products. Students enrolled in this option will follow the basic curriculum for Food Technology in the School of Agriculture, but will be counseled by members of the Animal Sciences staff interested in dairy products, meat or poultry products. In addition to the basic Food Technology curriculum, students will be required to take three credits in the Animal Sciences, other than food products. The plan of study may be summarized as follows: (See below, Animal Food Science Option)

COURSE CHANGES

In 1962-63, the Departments of Animal Science, Dairy and Poultry Science were offering a total of 85 courses with credits totaling 187 hours, exclusive of the M. S. and Ph. D. research courses. After these three Departments were combined into the Department of Animal Sciences on January 1, 1962, 17 courses were deleted and 5 new courses were added, reducing the course offerings to 73 and the credit hours to 170. These changes were effective in the fall of 1963.

In the spring of 1963, one course was deleted and one course was added so that the course offerings and credit hours remained the same for the fall of 1964.

In the spring of 1964 four courses were deleted and one new course in artificial insemination was added so that the department will offer 70 courses and 163 credit hours in the fall of 1965. These course offerings may be summarized as follows:

COURSE CHANGES

Subject Matter	No. of Courses	Credit hours by level of instruction						
		100	200	300	400	500	600	Total
General and Introductory	7	6*	5	2	2	2	0	17
Genetics and Breeding	9	0	0	0	3	6	7	16
Nutrition	10	0	4	0	3**	13	6	26
Physiology	7	0	0	0	6	7	6	19
Production and Management	8	0	0	6	0	15	2	23
Meat and Poultry Products	5	0	3	3	0	6	3	15
Dairy Manufacturing	13	3	0	4	3	23	0	33
Seminars	7	0	0	0	2	0	5	7
Special problems and research	4	0	0	0	1-3	0	1-4	7
Totals	70	9*	12	15	22**	72	33	163

* 3 credits of Animal Agriculture offered at Vincennes University only.

** 3 credits of nutrition offered for Veterinary students only.

STUDENT CONTACTS AND ENROLLMENTS

During the 1962-63 academic year, undergraduate enrollments in the Animal Sciences courses totaled 680 in the first semester and 696 in the second semester for a yearly total of 1376.

In 1963-64 this had increased to 775 in the first semester and 738 in the second semester for a total of 1513 for the year. In the fall of 1964, undergraduate enrollments totaled 689 in Animal Sciences Courses and graduate enrollments totaled 183.

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COMMITTEE REPORTS . . .

IMPROVEMENT OF INSTRUCTION

The Committee on Improvement of Instruction consists of James D. Hamilton, Chairman, Austin Peay State College, Hilbert Kahl, Northeastern Junior College, Dr. Edward W. Dayton, Nicholls State College, and Glenn E. Karls, Southwest Missouri State College.

The Committee decided to make a study in the area of Research Material Available to Institutions That Were Members of the National Association of College Teachers of Agriculture. A questionnaire was formulated and mailed to thirty institutions that were members of NACTA. There were twenty-two or 73.3 per cent of these questionnaires completed and returned for tabulation. One questionnaire was late being returned and was not included in the study.

The questionnaire was formulated in such a way that the following objectives could be determined:

1. The need for increasing the availability of research information from sources other than the local institution.

2. The various sources of research information available to those institutions that are members of NACTA.

3. The distribution of research information within those institutions that are members of NACTA.

4. The distribution of research information in the various fields of agriculture in those institutions that are members of NACTA.

The need for increasing the sources of research information other than the

research compiled by the local institutions that are members of NACTA is indicated by the following tabulations.

1. There were nine or only 41 per cent of the institutions returning the questionnaire that performed research in the field of agriculture.

2. There were thirteen or 59 per cent of the institutions that performed no research in the field of agriculture.

3. There were only two or 9.1 per cent of the institutions that performed very much research in the field of agriculture.

The institutions, that are members of NACTA, receiving research information from various sources without requesting this information is indicated by the following tabulations:

1. There were ten or 45 per cent of the institutions that received considerable research information from the local state experiment stations.

2. There were three or 14 per cent of the institutions that received some research information from the local state experiment stations.

3. There were nine or 41 per cent of the institutions that received no research information from the local state experiment stations.

4. There were fourteen or 63.6 per cent of the institutions that received research information from their local land grant college.

5. There was one or 4.5 per cent of the institutions that received some research information from their local land grant college.

There were 144 undergraduate students majoring in the Animal Sciences during 1962-63, and 165 during 1963-64 and approximately 160 during 1964-65. These are being counseled by 24 staff members in the department. A total of 60 students will graduate in 1965 as compared to 41 in 1964 and 45 in 1963.

In addition to the above, there were 62 graduate students in the department working toward the advanced degrees of Master of Science (thesis and non-thesis) and Doctor of Philosophy in the fall of 1962. This increased to 67 during the spring semester of 1963, 69 in the fall of 1963 and 74 in the spring of 1964. During the fall of 1964, there were 109 graduate students majoring in some area of the Animal Sciences.

Animal Sciences instructors have additional contacts with approximately 100 Winter Course students in seven courses offered for an eight week period in January and February.

6. There were seven or 32 per cent of the institutions that received no research information from their local land grant college.

7. There were nineteen or 86.4 per cent of the institutions that received research information from the U. S. Department of Agriculture.

8. There were two or 9.1 per cent of the institutions that did not receive research information from the U. S. Department of Agriculture.

9. There were twenty or 91 per cent of the institutions that received research information from other sources.

10. There was one or 4.5 per cent of the institutions that received no research information from other sources.

11. There was one or 4.5 per cent of the institutions that did not respond to this question.

The institutions, that are members of NACTA, receiving research information from the local state experiment stations and from the local land grant colleges by requesting this information indicated by the following tabulations are:

1. There were sixteen or 72.8 per cent of the institutions that received research information from local state experiment stations.

2. There was one or 4.5 per cent of the institutions that received some research information from the local state experiment station.

3. There were two or 9.1 per cent of the institutions that received no research information from the local