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ADAPTING AGRICULTURAL ECONOMICS CURRICULA TO A CHANGING AGRICULTURE

By

H. R. Stucky

New Mexico State University

A technological revolution is in progress in American agriculture. This revolution has attracted wide attention and has created many problems. The agricultural colleges and universities throughout the nation have contributed much to the progress which has been made in agriculture and are concerned with the many new problems which have emerged. The development of commercialized agriculture and the social and economic problems associated with this development is presenting a challenge to the Departments of Agricultural Economics to prepare leaders, trained effectively to serve agriculture, the businesses associated with agriculture, and the nation. This challenge is being considered by most Department of Agricultural Economics, in many cases in cooperation with and in relation to the entire agricultural, economic, and social programs of colleges and universities of which they are a part.

To many persons the term agriculture means the farm, the livestock and crops grown there, and the farm family. They do not recognize that the grain elevators, the cotton gins, the stockyards, the packing plants, the farm machinery factories and dealers, the fertilizer factories and dealers, numerous banks, and many other businesses exist only because they serve agriculture.

New Concept of Agriculture -

In a paper on philosophy of undergraduate training, H. B. James[1/] points out a new concept of American agriculture as follows:

"Today our views of agriculture have widened. As a result of the recent adjustments in agriculture, a new concept of agriculture is emerging. In this new concept, agriculture is defined to include three important segments of our economy.

The first segment includes the farmers themselves who are engaged in the production of crops and livestock. There are eight million people employed on farms in the United States.

The second segment includes those industries which furnish supplies and services to farmers. This group of industries employs about six million people and is vital to the emerging concept of "agribusiness."

1/ H. B. James, The Philosophy of Undergraduate Training, Journal of Farm Economics, Vol. XLI, No. 5, December 1959.

The third segment includes those industries and commercial enterprises that process, store, handle, and merchandise the products of our farms. This is the largest of the three groups in terms of the number of people employed. Currently, this group of industries employs about ten million people.

Taken together, these three groups employ approximately one-third of the total number of persons employed in the United States. Think of it--more than one out of every three employed persons work in agriculture. Anyway you look at it, these three groups are important segments of the national economy."

Curricula Must be Broad -

If the Agricultural Economics curricula are to make an effective contribution under this new concept, then the objectives must be broad and there must be a wide range of course selection available to the student.

The Agricultural Economics student may become a farm or ranch operator, a county agent, a loan representative for a bank, a manager for a machinery company, or he may enter one of a variety of other occupations. Also, he may become a professional Agricultural Economist following graduate training. As a rancher or farmer and in many of the other fields, he would have many production problems as well as business problems.

Stress Principles -

No set pattern of courses can possibly serve the needs of all agricultural and related occupations. Still there are certain factors in common.

First, agriculture and the related industries are changing rapidly. Therefore, the student must receive training in scientific principles and in the methods of applying these principles.

Second, many of the positions require men who have training as agricultural businessmen, in addition to training in the basic agricultural sciences.

Third, a basic understanding of social and economic principles are required in addition to science and business training.

Not all of these can be covered adequately in a four-year undergraduate course, but most students of agricultural economics should have an understanding of the principles in each of these areas, if he is to develop into a successful leader in present and future agriculture.

Opportunities in Agriculture -

One point which should be stressed with potential students of Agricultural colleges is that there is a guaranteed increasing demand for food and fiber because of the increasing population throughout the world. Agriculture will be challenged to supply this demand.

Many potential agricultural students are flocking to engineering and physical science fields. They are leaving agricultural pursuits because of (1) the glamour connected with rockets, planes, submarines, and atoms, plus, (2) higher starting salaries, and (3) the fact that many young men fail to recognize the potential opportunities in the industries directly associated with, and which are integral parts of our total agricultural industry. Also the favorable potential advancement possibilities both in position and salary often are not considered.

Agricultural Leadership -

American agriculture is envied throughout the world and would challenge most United States industries to meet it on an efficiency measurement. Agriculture as a whole, and specifically the agricultural colleges and the Departments of Agricultural Economics, have an opportunity to encourage men and women with backgrounds and interests in agriculture to become educated to serve in capacities of agricultural and industrial leadership. The curricula in both Agricultural Economics and the supporting fields should supply this education. Sentiment and interest alone in agriculture will not attract these students. An understanding of the opportunities in agriculture in the new concept and a solid basic course in agricultural sciences and business will be required, if the agricultural college graduate is to be satisfied with his education, and if he is to meet the competition from graduates from other disciplines.

Summary of 55 Colleges and Universities -

To determine what curricula changes had been made and were planned across the nation, questionnaires were sent to 55 Agricultural Economics Departments. Answers were received from 47. Respondents, in addition to returning the questionnaire, in more than half the cases sent college catalogues, or letters explaining the changes that have been made, or changes now being instituted.

Eight departments have made no major changes in the past five years. Of these, two had made major revisions just prior to the five-year period (1955-59) specified in the questionnaire. Only one department reported that no major change in curricula had been made in the last seven years and that no major revision was contemplated.

Of the 47 institutions which answered, 44 granted Masters' degrees, and 25 granted Ph. D degrees.

Curricula Changes Usually College-Wide -

In the majority of colleges and universities, the major curricula revisions were college-wide. The questionnaire revealed that, of the 47 answers received, 35 of the revisions in the agricultural economics departments were a part of agricultural college curricula revisions. The stimulus for the revisions came from various sources. The Department of Agricultural Economics faculty or the agricultural college faculty initiated 54 percent of all changes. The Dean's office, through appointed college-

wide committees, initiated the changes in 17 cases, or 36 percent. The remaining 10 percent was accounted for by requests originating with students and alumni, but initiated through regular faculty procedures.

Agricultural Business Curricula -

Agricultural Business curricula were reported in 40 replies and 5 reported no such curricula. Two did not answer this question. The University of California at Davis reported a new Masters' degree in Agricultural Business which was initiated in the fall of 1959.

Michigan State University, in considering reorganization of its curricula, lists the following objective in connection with establishing its major in Agricultural Business:

"To establish a genuine Agricultural Business major. Twenty to 30 percent of our graduates accept positions in agricultural businesses and industries, yet we have not, in the past, specifically prepared them for these positions."

This statement is the general point of view from the numerous colleges and universities where Agricultural Business curricula have been added in the recent (1 to 5) # years.

There is a wide variation between colleges and universities in the organization of the agricultural economics curricula. This is due to the methods followed in revising the curricula and the time the revisions have been in process. This variation also exists because of the varying course offerings at the institution and the type of agriculture in the state.

Three Major Approaches -

There are three general approaches followed in making curricula revisions in the several Agricultural Economics Departments and Colleges of Agriculture.

The first procedure has been a major curricula revision within the Department of Agricultural Economics where three or four options are established, such as Farm Management or Farm and Ranch Operations, Professional Agricultural Economics, and Agricultural Business. In one case, a major in Water Resources is included. These revisions usually have been made independent of any revisions made in other departments, except for the overall academic faculty approval required at most institutions.

The second method of change has been to reduce the specified college and department requirements as listed in various options and to allow for tailoring the program of each student to his particular interests and needs. This procedure has been followed in several of the college-wide revisions.

The third is a change which involves the entire College of Agriculture where only three to five curricula or majors[2/] are established for the college, such as: (1) Agricultural Science, (2) Agricultural Business, and (3) Agricultural Production. Two institutions carry Agricultural Education and Agricultural Engineering as additional major fields. Seven colleges and universities reported this method, five having put these changes in operation during the past two years, with two in the process at present. In two institutions, the Agricultural Business curriculum is a major division in the Department of Agricultural Economics while in others, Agricultural Business is one of the three majors which may be developed in any department.

Reduce Introductory Courses -

In shifting to the three broad majors, the most common "introductory courses" have been superseded in two institutions by combining several courses into overall orientation courses with titles such as Animal Science in Agriculture, Plant Science in Agriculture, and Social Science in Agriculture. Minnesota's college-wide curriculum self-survey committee stated one of their objectives in curricula revision as follows:

"To free curriculum of rigid requirements that every student take an introductory course in every agricultural field of specialization."

Social Science -

A Social Science or Humanities block of courses of 9-15 hours is being added as part of the requirement in most of the recent major curricula changes. These are required of all agricultural students, regardless of their major. This block is being added in some of the agricultural colleges under each type of curricula revision.

Students Have A Wide Variety of Selections -

Installation of the three broad curricula, or majors, with most departments offering work under each of these, results in a considerably larger number of general selections available to the student. In several universities, almost all departments may offer majors in Agricultural Production, Agricultural Science, and Agricultural Business. Also in some institutions the student may plan to meet the requirements for two or more majors. This is in contrast to the usual practice of the student majoring in one field, with possibly a minor in the second field.

Montana State College's Curriculum Committee proposed the following curricula and majors in the Division of Agriculture:

2/ There is no uniformity in naming these newer programs. Of three institutions making the change, two refer to the larger areas Agricultural Science, Agricultural Business, and Agricultural Production as curricula, while one refers to them as majors.

Curriculum*	Major
AGRICULTURAL BUSINESS) AGRICULTURAL PRODUCTION) AGRICULTURAL SCIENCE)	(Agricultural Economics (Agronomy (Animal Industry (Dairy Production (Dairy Manufacturing (Horticulture (Poultry Industry (Range Management (Rural Sociology (Soils
AGRICULTURAL EDUCATION AGRICULTURAL ENGINEERING	

* It is recommended that a degree be offered in each of these curricula and that the major also be noted on the diploma (for example, Bachelor of Science in Agricultural Science (Dairy)).

In contrast to the footnote above, North Carolina State College reports the following procedure:

"The wording on our diplomas is 'degree of bachelor of science' with no indication as to whether it is in one field or another; not even the word agricultural appears on our diploma. However, the student's transcript shows the curriculum and the major."

Orientation Course -

A few institutions listed a required course in Agricultural Orientation for freshmen students. It seems that this type of course, if well organized and presented, would be invaluable in assisting a student to make use of the more advanced curricula in which he has maximum freedom in tailoring his program to fit his desires and, at the same time, include the required courses.

Student Counselling Department -

Effective student counselling is becoming more important in all of the major fields. The tendency is evident in the questionnaires received that specific required courses are being reduced and the students are being offered electives from blocks of courses from several disciplines. Usually a standard freshman year is prescribed but the remaining three years of the student's program is built up by selection. This counselling will require additional staff time and an interest and willingness on the part of the staff members to spend the required time with the student. Also, if the student is to benefit from this type of curriculum, he will have to take considerable initiative, in seeking the help he will need to effectively tailor his program from, the several large blocks of courses offered for his selection. The student with initiative and imagination stands to benefit greatly, while some students may find themselves confused and possibly completely lost in this process. However, the experience at those institutions with the system of wider selection has not been too unsatisfactory. The University of Illinois

has a publication entitled A Handbook for Agricultural Students and Their Advisors. This is one of several such publications now in use to improve student counselling.

Summary -

In summary, it is evident that the need for changes in curricula has been fully recognized both in the Agricultural Economics departments, and in the Agricultural colleges of the nation. The three general types of curricula organizations now in use can not be fully evaluated at this time because most of the major revisions have occurred since 1958 and three or four will become effective in September 1960.

It is obvious that much thought has gone into the revisions at each institution both at the department and college levels. One institution reported that over 7,000 hours of work had gone into the research and the actual committee work in their college-wide curricula revision. Considerable follow-up will be required.

The evidence is that progress is being made, and that stronger curricula and procedures are available to educate and train the student in Agricultural Economics, to make them more effective in meeting the needs of a changing agriculture. A two or three year period must elapse before the strong and weak points of the newer systems will be known and to determine what further adjustments, if any, in these newer systems may be required.

DISCUSSION: AGRICULTURAL ECONOMICS CURRICULA IN A CHANGING AGRICULTURE

By

R. A. Christensen

Utah State University

Dr. Foytik has given us an excellent paper on a proposed solution to a problem which has received altogether too little attention in the past. The problem is: How shall curricula in agricultural economics be adapted to a changing agriculture?

It may be some comfort to know we do not stand alone as we face this challenging problem. The American Farm Economic Association has given consideration to the need for curricula changes in all of its recent annual meetings. A cursory inspection of proceedings of the annual meetings of the American Dairy Science Association and the American Society of Agronomy shows that our colleagues in other disciplines within agriculture are also trying to decide how to adapt curricula to meet the needs of changing agriculture.

Dr. Foytik has pointed out some of the more important changes which have and are occuring in agriculture, how these changes create problems in Agricultural Economics curricula, and what the University of California at Davis is doing about it.

At the risk of oversimplifying, these changes are:

1. Farming is becoming more scientific, mechanized, specialized, commercialized, competitive, and complex.

2. More and more functions are being shifted to off-farm agriculture-related businesses.

3. The number of people in agriculture employed in farming is decreasing while the number employed in related off-farm businesses is increasing.

4. More attention is being given to economic and business problems.

5. A managerial group is emerging in agriculture similar to that in non-agricultural industries.

The problem is: How to properly and adequately train this managerial group in agriculture?

The solution, at the University of California: A special undergraduate curriculum and option in Agricultural Business Management, and more in particular, a master of science program in Agricultural Business Management.

The staff of the University of California at Davis should be congratulated for their early recognition of the need to adapt curricula to modern agriculture and for the pioneering action they have taken in establishing an Agricultural Business Management program. Dr. Foytik should be congratulated for the capable and methodical manner in which he presented his paper explaining the California program

Although Dr. Foytik fully covered his subject, his paper probably creates more questions in the minds of most of us than it answers. There is, no doubt, general agreement concerning the basic changes taking place in agriculture. There is probably less agreement, however, on what we should be doing about them. We have heard what the University of California is doing, but the big questions still facing most of us are: What are we doing, and what should we be doing?

Will our curricula problems be solved if we develop an undergraduate and graduate program in Agricultural Business Management? I think not. In adapting our curricula to modern agriculture, we must consider more than just business management, although the latter will be an important part of our consideration. Some departments probably need to take a look at their basic undergraduate curriculum and ask themselves: Have we kept pace with technical, economic, social and political changes. H. B. James claims many Land Grant institutions have not. He says, "Past programs have been aimed mainly at farming rather than agriculture in its broadest sense. Programs have weighted heavily with applied training and have been weak in fundamentals."[1/]

What general adjustments in basic undergraduate curricula should be made to adapt them to modern agriculture? Most of those who have contemplated this question have arrived at the following basic conclusions, according to J. W. Jones.[2/] I think most of us will agree with them.

1. More emphasis should be given to the so-called basic sciences. Included in this category are mathematics, biology, chemistry, and physics.

2. More emphasis should be given to business.

3. Less emphasis should be given to art or practice.

Those colleges and universities which have attempted to reorient their curriculum in accordance with the needs of modern agriculture can probably appreciate the fact that curricula development is subjective and that many differences of opinion may arise among staff and between the department and the college. Also, recognizing curricula changes which should be made is

1/ James, H. B., "The Philosophy of Undergraduate Education," Journal of Farm Economics, Vol. XLI, No. 5, December 1950.

2/ Jones, J. W., "Enrollment Trends in Agricultural Colleges," Journal of Dairy Science, Vol. 43, No. 1, January 1960.

one thing, and making them is another. Being a social science, Agricultural Economics finds itself a minority among many other applied science departments in the College of Agriculture. Because the majority has required agricultural majors to take certain applied classes which load down curriculum, some colleges and universities probably have not been able to move as rapidly as they would have liked to in increasing the number of courses in science and business, and decreasing the number of applied courses.

Even if we can agree that we need more science and business courses and less applied courses, we still have the problem of how much science, how much business, and how much time for general education? These are questions we need to explore further as an association.

Dr. Gunn's[3/] paper last year shows that most universities in the west are doing more than just thinking about the need for more agricultural business management training. Most schools indicated they either were or expected to offer an option in Agricultural Business Management and about half indicated they either were or expected to offer one or more agricultural business management courses.

Many universities are probably wondering if the California program is the answer to their Agricultural Economics curricula problems. Perhaps it is, perhaps it isn't. Before we can answer such a question we first need to answer some others. Should each college and university offer an option in Agricultural Business Management? What other options should be offered? How many, if any, agricultural business management courses should be taught within the Agricultural Economics Department? How many and which universities and colleges have the demand as well as the resources to offer a graduate program in Agricultural Business Management? Is our only curriculum problem one of a lack of agricultural business management, or are their other deficiencies?

There is something else we should take note of. While we in agriculture are moving further in the direction of more specialization in business management, it is significant that leading schools of business appear to be moving strongly in the opposite direction, according to L. F. Miller.[4/] On the point of offering special options or programs in Agricultural Business Management, he says, "I have some fear . . . that our students will find the training they receive in this connection inadequate for their needs in 1975, when they hope to be in responsible management positions. If we are serious about preparing our students for management positions in agribusiness, I believe we must be especially concerned about giving our students a broad, fundamental training with particular emphasis on adequate background in the social sciences, humanities, mathematics and numerical analysis."

3/ Gunn, Thomas I., "Teaching Programs In Agricultural Business Management," contributed paper, Western Farm Economics Assoc. meeting, July 1959.

4/ Miller, L. F., "Discussion: Undergraduate Training in Agriculture," "Journal of Farm Economics, Vol. XLI, No. 5, December 1959.

In his paper, Dr. Foytik has shown us how California has adapted their curricula in agricultural economics to changing agriculture. He has given us much to think about as we adapt ours.