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GOALS AND PROBLEMS OF A GRADUATE PROGRAM
IN AGRICULTURAL ECONOMICS

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There are probably three major goals or responsibilities that have to be met in conducting a sound program of advanced training in Agricultural Economics, or, as a matter of fact, in any other field. In order of priority, these are 1. to provide specialized training in the area of main interest to the student, 2. to teach students to work efficiently in solving problems, 3. to provide an academic atmosphere in which the student can crystalize his thinking in terms of a general scientific philosophy.

The responsibility for the first of these goals rests, to some extent, with the particular department. It is a major responsibility of the student to select that department which he feels is best equipped to provide him with the training he needs in the area of his major interests. This is probably less of a problem in our field than it is in some of the physical and biological fields. For instance, our Botany Department lists specialized training and research in physiology, pathology, mycology, morphology, anatomy, taxonomy, ecology, microtechnique, cryptology, genetics, cytology, geography, propagation and nutrition; and even then the program is not complete. These are fourteen major areas of work and I suspect that most agricultural economics departments do not try to cover half that many.

The second goal, that of teaching students to solve problems efficiently, is primarily the responsibility of the department, and certainly the main adjunct of the department's responsibility to provide substantive training in economics. As a matter of fact the responsibility of the department here may well be largely to help the student understand that problem solving is what he is learning; that it is the core of his training in Agricultural Economics; and that the specialized courses he takes in economic theory, in the economics of agriculture, and in the use of research tools are all aimed at helping him solve problems.

The goal of a dynamic academic atmosphere is obviously the shared responsibility of the department and the university, with, perhaps, the greater burden resting with the university. The academic environment in which a graduate student works is made up in part of his own department, but an important part is made up of the supporting departments such as economics and other social sciences, mathematics and statistics, and departments in the College of Agriculture. An agricultural economist must be first of all a good economist in all areas of economics such as production, marketing, consumption, welfare, trade--and much of this work should be taken from specialists in economics. Similarly, the development of the ability to use research tools based in mathematics can be aided by mathematicians, as can knowledge about agricultural technology be gained from the production departments in agriculture. Moreover, contacts with graduate students in the other disciplines through seminars and courses will sharpen the ability of an agricultural economist to think.

The attainment of the goals of a graduate program in Agricultural Economics is closely related to the type of economist the department hopes to produce. This will depend upon the raw material provided and the work the student has in prospect. Three major types of men are, or could be, processed by Agricultural Economics departments. The first, Type A, is the traditional Agricultural Economist who has received as good a training in economic theory and in research methodology as the department can provide. Certainly, the majority of our graduate students are of this type. Such men are trained for and generally go into teaching or research work, in colleges, extension, or the U.S.D.A.

The second, or Type B, is the man who might be labeled a Practical Agricultural Economist for lack of a better term. This man was, and will continue to be, primarily a physical or biological specialist, such as an agronomist, but he feels he can profit by, and in some way probably has been encouraged to acquire, a knowledge of economics and the decision-making process. Only Harvard in New England now has a formal program aimed at training such men even though some may have been trained at other schools.

The third major type can be thought of as an Agricultural Business Economist. This Type C is equipped to operate in the business world because of a strong background in such things as accounting, business management, and market analysis taken previously or concurrently with work in Agricultural Economics. Such an agricultural economist is being produced only occasionally in New England. Actually, if one does come off the line, it is probably due to defective raw material or to a kink in the production line. Straight Economics and Business Administration departments are not producing men of this type.

These three end products of our teaching at advanced levels will affect the attainment of the goals of our programs because each requires a different level of training.

Problems

There are many problems confronting New England Departments of Agricultural Economics connected with offering a graduate program. Since it will be possible to discuss only a few of these, I will choose those which I think are most important. Actually I will discuss only three. These problems are not in any way divorced from the goals of a program. They are, as I view them, the decision making that must be carried out to achieve the goals established by any department. They are, moreover, closely related to the type of end product the department hopes to produce.

The manner in which the goals of advanced work will be achieved by any department is a highly personalized and unique function. Any two departments in New England will not follow the same methods of producing an agricultural economist. I suspect that this statement would hold true for most of the other departments in the country. Each department has worked out its own solutions according to its resources, its prejudices, the prior training of the men on its staff, its size, and the institutional situation in which it finds itself.

Research Tools versus Economic Theory

Probably the greatest difference that exists between our departments has to do with the emphasis put on pure economic theory. This difference exists because of the working out of two major ideas. One is the emphasis that the department feels it should put on the teaching of research techniques as distinct from economic theory. By research techniques I mean such things as the mathematical tools of calculus, statistics, and linear programming; the data collecting tools of surveys and account books; and the handling of secondary data. The other difference concerns the emphasis a department feels should be put on problem solving activities as distinct from course work. These are probably closely related problems, but I will throw in some thoughts on both of them.

Is it more important to teach economic theory or to teach the mechanics by which the analysis of economic problems can be conducted? Ideally, of course, we should have a strong program in both, but it is probably quite difficult to handle both adequately, especially in small departments and if only a Master's degree is sought. Observation of work that has been done in the field of agricultural economics leads me to a strong belief that there is no substitute for a very thorough grounding in economic theory; and that research techniques, as such, should be an adjunct of any program in agricultural economics. This statement may sound rather contradictory in view of my earlier point that the main core of a graduate program in Agricultural Economics is the development of the ability to solve problems. However, this problem solving attribute is directed at economic problems and not problems in engineering or statistics or surveying or animal nutrition. To be a problem solver, the first and by far the most important requirement is a thorough knowledge of theoretical concepts in economics and a grounding in the ability to think, and perhaps more important, to think originally.

Problem solving involves, first of all, two major steps--first, the perception of a problem, and second, the ability to ask the right questions aimed at solving that problem. This question asking is a function of the researcher alone--he asks the questions of himself. He must have hypotheses or probable answers which he wants to test. Otherwise, he will be lost in a morass of numbers and figures and spend most of his time and energy fighting, his way out.

A quote from a former New England Agricultural Economist, Ray Bressler, emphasizes this point. He says, "If research is to be more than superficial, it is essential to develop some broad concepts that will provide a framework within which individual studies may be fitted...To be most helpful, these basic concepts must be such that they can be elaborated in more and more detail as they are applied to specific cases. The need for these concepts has been emphasized time and again, usually in such familiar terms as logical and qualitative analysis, armchair thinking, theorizing, or research planning. The essential idea is that research must be purposive and not haphazard. There must be clearly formulated ideas and not a random gathering of data in the hope that relationships will stand out from the masses of tabulated figures. The logical relationships must be inserted as well conceived hypotheses and then tested with carefully designed empirical studies."^{1/} Bressler

^{1/} Agricultural Marketing Research, Social Science Research Council, R. G. Bressler, Jr., 1947, Preliminary Draft, pp. 9 and 10.

then points out that the spectacular developments in the field of atomic energy stemmed directly from the work of the theoretical physicists and mathematicians. I would also like to point out that the work done here on this campus by Dr. Scott in his development of the high energy poultry ration was conducted in such a way that he knew the answers to his problem before he put a single bird on test.

A danger does exist, however, in a graduate program that strives to carry out the point of view that economic theory is of prime importance. This danger is that the individual may prove sterile. Sterility under any circumstances is very unfortunate. The sterility which might develop out of a program directed primarily at theoretical economics, however, would not be caused so much by lack of potency as by lack of knowledge about how to proceed. And this, of course, is not so much a matter of being unfortunate as it is a lack of gumption. So I feel that an important function of a graduate program is to provide the individual involved with the ability to solve problems and the courage to proceed with his research.

To carry on successful investigations the agricultural economist must first pose a problem and establish some hypotheses; this is by far the most important part of the activity. However, he must then go on to the second part of problem solving: He must in some way assemble the relevant data and have these data processed through the appropriate research techniques so that his hypotheses are tested as accurately as possible. This data collecting and processing is in essence the experimental technique. It is the design of this experiment which can make or break the analysis.

A researcher should know before he leaves his desk the major variables he will meet, how he will measure them, and have some apriori knowledge as to how they are related. He should already have selected the tools that will be used in analyzing the data.

The question presents itself of how best to train a graduate student in this experimentation. Here lies one of the real strengths of Experiment Stations in training graduate students--we on the staffs are paid to solve problems and the participation of the graduate student in the activities of the experiment station provides the best alternative method for his learning this process. It is certainly superior to course work on the use of research tools.

Concerning the questions of methodology versus theory and problem solving versus course work, the following conclusions are presented:

1. If a choice must be made between the teaching of economic theory and the use of research tools, such as high level statistics or survey methods, the choice might better be made in favor of theory, because the recognition of economic problems and the posing of hypotheses come out of thinking as an economist, not from the ability to take a good schedule.
2. Successful research analysis depends in part on designing the experiment to test the hypotheses. Course work on methodological tools may well provide a strong foundation for this work. However, this is not a substitute for the actual experience of problem solving provided to the graduate student who works directly upon an actual problem under the guidance of a competent, experienced research worker.

Specialization in Economics

The American College system is in general characterized by fairly broad training at the undergraduate level and by rather extreme specialization at the graduate level. We generally feel that a graduate student should concentrate on a quite specialized field of study. The question arises whether this is the best alternative in producing an effective agricultural economist as opposed to providing a broad training in the social sciences.

If we are in agreement that our function is to produce problem solvers, then we must at least give considerable attention to the fact that most problems are broad and complex and very often require the use of a number of disciplines in their solution. Very few problems that we are called upon to solve are purely economic or purely agricultural; yet as agricultural economists, we are presumably equipped to work only, or at least more effectively, in the field of agricultural economics.

I believe the broadness of most problems coupled with the rather narrow training of the specialists who are asked to solve them has led to unsatisfactory attacks and answers in many fields of activity. Certainly, the technique often called "farm and home planning" was developed as an effort to counteract the narrowness of the ordinary extension specialist in his efforts to help farmers with their problems. Persons concerned with demand are finding useful help in the field of psychology. In farm management we are beginning to realize that decision making is only in part economic. Another evidence of this discouragement with the ability of modern specialists to attack problems is contained in the Preface of a book by Philip Wylie, called Generation of Vipers. He introduces his point in a rather amusing way by relating the story of a friend of his whom he calls "a bold nut." This friend had the uncommendable habit of taking drugs, and he noticed a curious feeling of revelation which was left in his memory after the effects of the drug wore off. Try as he would, he could not quite bring to the surface of his conscious mind the great thoughts that he knew he had while under the influence of the drug. So he set out paper and pencil for himself, administered the drug, "made one frantic effort to write to himself and passed out cold. When he came to, he found he had scribbled four words: 'Think in other categories'."

Wylie says, "This single sentence may seem trivial unless it is closely examined, when the thundering significance of it will reverberate through the mind. To physicists, chemists, biologists, medical doctors, sociologists, economists, Columbia professors and all other such mechanics, this is, in solemn truth, a most profound challenge. They are so busy promulgating the marvels they have uncovered in the single category with which they concern themselves, that they never admit of the possibility of another. Like all common men with a productive franchise, they seek passionately to turn it into a monopoly; and in trying, they distort law, trample bystanders, and insult their superiors. Whom they cannot convince, they ridicule, deny, rage against, or undo by metaphysical quibble. And when ships of state sink with these mortarboarded buffoons on the bridge, they go down gallantly, if foolhardily, thinking no doubt that water will not suffocate them because it consists so largely of oxygen." ^{1/}

^{1/} Generation of Vipers, Philip Wylie, Rinehart & Co., 1942, pp.XV and XVI.

This is a rather caustic indictment of us and other specialists. I feel that it is partially deserved. It raises the question of how in the world we can, at one and the same time, be highly effective scientists in this age of vast knowledge and narrow specialization and also be all things to all men. It is the eternal question of the specialist versus the generalist and is a major problem faced by those offering and those taking graduate work in agricultural economics. My own feeling is that the field of agricultural economics is in the unique position of straddling the chasm between the physical world and the social world. We have one foot in the agricultural production field and the other in the minds of men. This means that narrow specialization is not desirable. Yet knowing a little bit about a lot of things is also not desirable.

A compromise, as usual, is preferable, but how can this be pursued? I do not believe that general or survey courses in sociology, psychology, animal husbandry, etc. is the answer. Genuine substantive courses in the supporting areas of interest to the student should be built into the curriculum of each student. He then, at least, becomes a broadened specialist and moves toward the middle ground between the two extremes.

Curricula

Traditionally, Agricultural Economics departments have trained men to become teachers or researchers in the field. Each department has pursued a different route but each would probably agree that the men it turns out are more or less fashioned in the image of their instructors.

A problem we should face up to is whether we should organize formal curricula at the graduate level for the two typical types of economists that we might train, the practical economist and the agricultural business economist. My department has been approached by several young men in the Extension Service, the V.A., and the S.C.S. who want to pursue graduate work in agricultural economics. They have two important reasons for this. One is the strong feeling on their part that to be more effective in their present lines of work they should know more about the economics of farm production, and the other is that advanced study in anything will contribute to their advancement. Needless to say, our strong emphasis on economic theory did not encourage these men to pursue the course.

I do not believe that the answer to this problem that was worked out by the group at Harvard is useable by the land-grant college departments, because in their case it involves a special degree program. I do believe, however, that we can at the Master's level set up a formal curriculum geared to the training of men who do not want to become professionals in the field. We have had the idea that agricultural economists are a breed apart and that a man is either completely in or completely out. This idea should change if agricultural economics departments are to have influence on the training of any appreciable number of workers in the agricultural industry.

The same idea holds for the advanced training of men who have their sights set on becoming business managers or executives with firms servicing agriculture. A few years ago a friend of mine was interviewed for a job with a large milk handler. This company was anxious to get a man acquainted with

farming and who had economics training, but they also knew that to be an effective member of their staff the person hired should be able to understand and work with accountants. They reluctantly hired a straight accountant. Such opportunities are probably numerous in New England, yet we make no effort to fill the need.

A program aimed at satisfying the needs of these two types of students should contain the major features of the ordinary graduate program: that is, emphasis on economic theory and problem solving, with very little emphasis on the actual mechanics of the use of research tools such as calculus, surveying methods, and so forth. The level of training in economic theory should be that of advanced undergraduates, with emphasis on the simpler concepts in production economics and marketing. Moreover, we have in our departments research projects and Extension programs in which such students could participate to get some experience in problem-solving methods. It is quite possible for us to offer such a program at the Master's level and not in any way dilute the quality of our regular training. It is not a good possibility at the Ph.D. level.

The providing of such training at the Master's level can be included under the goals set forth at the beginning of this paper. As a matter of fact, the third goal, that of helping the student crystalize his thinking in terms of a general scientific philosophy, might well be the major goal of a special program like this, and could be an eminently successful contribution of our departments to the agricultural industry of the region.

Thoughts for the Future

We might best serve our own self-interests by taking a look at the future of agricultural economics graduate work in New England. The present picture in our departments is something like this:

1. Only one department offers a Ph.D.
2. Our departments are quite small in staff numbers.
3. With one exception our undergraduate students are few in number.
4. Our numbers of graduate students are quite small.
5. Again, with one exception, our institutions are relatively small.
6. Agriculture is not a predominant enterprise in the area.
7. Our departments face extreme competition from larger land-grant colleges in acquiring graduate students and staff.

Probably none of these conditions will change materially in the near future. So what we should do is develop the strengths we have and see ways to live with our weaknesses.

Certainly our major strength lies in the possibility of providing personal contacts between the staff and the graduate student. Our staffs are pretty much made up of senior members, each of whom is a qualified economist and experienced research worker. With few graduate students each of them is provided the opportunity for close contacts with the staff, and in no case do these contacts cause a real burden on the time of the faculty. This strength has probably not been exploited as fully as it should be, yet it might well be a major attraction for certain well-qualified students.

We can expect more competition for graduate students from the larger institutions, and probably no increase in the number of undergraduate majors from the New England area. To meet this competition our best offense is to offer a strong program for professional training in those areas in which our staffs are best equipped. For the most part, the degree to which we can offer training in the field of advanced statistics and mathematics will be conditioned by the facilities available in the respective supporting departments. Good research publications rather than many mediocre ones will also build our reputations and attract students.

Our departments will remain small, but by realistic appraisal of the special strengths of each department we may be able to use each more efficiently. Possibilities of specialization by departments is a very real issue. As you are all aware, our colleges are members of the New England Higher Education Council which is investigating the extent to which specialization in teaching might be developed in this region. I suspect this is a good deal more likely at the graduate level than at the undergraduate, mostly because of the difference in the type of student involved. If by a move toward specialization in agricultural economics graduate training, we can strengthen this work in New England, we will be better able to compete with larger Universities and to attract larger numbers of graduate students. Such a move may be the salvation for some of our departments.

It will now be interesting for me to find out what mistakes I have made in this analysis by hearing the story of graduate work from those who are doing it.