

legislation and the programs which it makes possible as perhaps the greatest opportunity that vocational education in agriculture has ever had, and the only limitations which may be placed upon the way in which we take advantage of these opportunities are the limitations of our own imagination, our own ability to plan and to meet them. I don't think there has ever been a period that was more exciting, more thrilling, in the opportunities which it holds to do a real job of preparing youth, high school and post-high school, the adults, the disadvantaged, for occupations in agriculture. We may do it differently; we may be called upon to justify, more than ever before, support for new training programs which we wish to establish; we may find ourselves working in fields other than what we consider strictly agriculture; we may find ourselves teaming with other vocational educators, and offering courses which erase entirely the lines of demarcation which once we thought sacred. We may find a changed climate in our land grant colleges. We may find continuing and maybe increased difficulty in recruiting the teachers which we will need for these new programs, but I see nothing that leads me to believe that all this is impossible. What was the motto that was popular in World War II? "The difficult we do immediately; the impossible takes a little time." Perhaps the most heartening thing is to look around and see the young men present here who now staff our teacher education faculties, who will spearhead the drive to meet and surmount the problems that I have identified. Those of us who are characterized primarily by bifocals, bridgework, baldness and bulges, can say with certainty--or, at least I can--that I am the poorest prepared, poorest trained member of my teacher education staff. Even with our, in comparison, inadequate preparation, we have met and solved in our way difficulties comparable to these. There is no reason to expect but what those who come after will do far better than we.

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#### WHITHER GOES RESEARCH IN AGRICULTURAL EDUCATION?

V. R. Cardozier, University of Maryland

A hasty reading of selected abstracts of research reported in "Summaries of Studies in Agricultural Education" over the past 29 years shows that in recent years there has been considerable improvement in the quality of research in agricultural education. Although they continue to dominate, surveys constituted almost all of the "research" that was done in the early days of the profession.

More recently we are seeing research in agricultural education that will compare with the better work in other social science fields. Each issue of "Summaries of Studies..." brings an increasing percentage of experimental studies, causal-comparative and ex post facto designs and other predictive studies. And, studies which formerly have been limited to description are more and more using a diagnostic approach.

Striking, too, is the improvement in sampling. A number of studies, notably by graduate students of Stevens at Pennsylvania State University, Bentley and Coster at Furdue, Thompson at California, Tom at Cornell, and several others have employed sampling techniques common in some of the more sophisticated social science and educational research. Simple tabulation of

numbers, which prevailed earlier, is giving way to increasing use of research tools for analyzing data. We find studies employing the t-test, Chi-square, and some use the F-test, and occasional use of some of the more specialized tests of significance, including non-parametric tests.

Although some agricultural educators scorn these developments as "numbers juggling", none of them has produced a satisfactory alternative approach. Instead, those who have mastered the techniques of such research are gradually producing research of real merit that can serve as a basis for substantive changes.

It is no secret that, in the main, there has been a serious lack of well-trained research competence among agricultural educators. Such studies as were conducted were more according to the rules of common sense than in keeping with scientific principles. Increasingly, however, we find agricultural education researchers utilizing the techniques of better educational researchers, of which the educational psychologists have been and are probably in the forefront. We should be cautioned, however, not to attempt to subject all of our applied research to laboratory study. By its very nature, it is often more applicable to study in a field setting. Nor should we attempt to impose laboratory procedures on field studies. For example, there is good evidence to suggest that attempts to equate groups through specific matching has little promise for field experimentation; increasingly, we find evidence that the most valid approach is randomization.

It seems that much research is attempting, perhaps unnecessarily and even undesirably, to control too many variables in experimental research. The debate on the merits of field research versus laboratory research in educational experimentation goes on. The beauty of the controlled experiment with all variables controlled except one tantalizes the novice researcher, and indeed the pro. But does it provide applicable answers? In some case, obviously, yes. But there is reason to suggest that future educational experimentation will increasingly rely on randomization of groups or individuals in field situations for matching, manipulating only the single variable under examination. Research to date indicates that it is worth more consideration.

My brief tenure as Specialist in Research and Teacher Training in Agricultural Education, in the U. S. Office of Education in 1959 provided me an opportunity to study several questions relative to research in our profession. One is the difficulty in attempting to conduct a nation-wide or region-wide study involving many people.

I became firmly convinced that research by committee is very likely to be poor research, particularly when it is scattered all over the country. The success of committees is based on compromise and when one compromises on research design, he is likely to weaken it.

Another weakness is the tendency of too many to concentrate too much on a single problem and ignore other pressing problems. At various times, various problems become popular, and researchers of all degrees "hop on the fast horse and ride." There is great temptation to research a popular topic. And yet, it would seem to be poor economics and poor utilization of the limited manpower available for research in agricultural education to amass the efforts

of many states on a single problem at the expense of other pressing problems. It is true, however, that by amassing several states on a single problem, the profession nationally is made sensitive to the problem and the new developments surrounding it. On the basis of promotion, it may have some merit, but as a way to gain new knowledge it is to be questioned.

As desirable as the product being promoted is, it is to be highly desired that another way can be found to promote it, without demeaning research for, except for a few first rate studies, such duplication is likely to produce a raft of second rate studies. They will take us back to the "piddling survey" with little validity and reliability. Let us hope that those who are inclined toward research of real substance will not be stampeded into hopping on every proposal brought out by some leadership group in the profession and conducting a "quickie" survey which is likely to produce little of substance and at the same time is likely to mislead neophytes in the profession concerning what quality research in agricultural education is. This does not consider the fact that outsiders judge us by our product - - - our research competence is judged by our publications. Perhaps we have a clue to how leading educational researchers see agricultural education research by the limited number of reports from our profession in such journals as the Journal of Experimental Education, Journal of Educational Research, Educational and Psychological Measurement and others of comparable quality.

In spite of the foregoing paragraph, there is reason for optimism about research in agricultural education. The younger Ph.D.'s are coming out better trained in research design and statistics. They have a more sophisticated view of research than did some of their teachers, and there is reason to believe that the trend to higher quality research will continue.

But there is reason for pessimism about the use of research in agricultural education. On this point, our profession is not alone; this is common among almost all areas of education. We are sold on research, i.e., on producing research, but we are not sold on consuming or using research. If you doubt this, ask yourself when you have last turned to the research literature to answer a problem relating to your program of work or other aspects of your professional activity. A botanist, a zoologist, a bacteriologist turn, when confronted with a problem, to the research literature. If the problem has been studied, he looks until he finds the research results and if feasible utilizes the findings to solve his problem.

Does agricultural education do this? With a few exceptions, agricultural educators still rely on opinion, judgment, and/or some authority (person) as a source of truth when confronted with a new problem; we research, for the most part, because it is "the thing to do". Research provides the status symbol. This may be a serious indictment, but it is nonetheless true. And it will continue to be true until we decide that the way to answer professional questions is to search the research literature, evaluate and apply it. And, that when we conduct research, realize that the sweeping overview is not likely to make much contribution to the fountain of knowledge in our subject. We must be content to study well rather limited question which will have enduring meaning for the profession.