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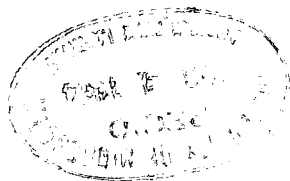
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**The Changes of Eight
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FARM MANAGEMENT RESEARCH IN U.S.A.

FARM management began its evolution as a science in the United States shortly after 1900. From that time until the late 1920's nearly all of the work in this field was concerned with the internal economies of farming—the organization and operation of the individual farm for maximum profits—but the agricultural depression, particularly in the early 'thirties, followed by the need for directed agricultural production during World War II, made demands on farm management workers to study the external economics of farming, or the relationship of individual farms to each other and to the national welfare. A nation-wide survey of farm-management projects in progress during 1940-1 showed that, according to their stated objectives, approximately half of the total research projects were being directed primarily towards solution of problems faced by administrators of state and national action programmes. The original objectives of farm management have not been foregone; rather, the later objectives represent an enlarged scope of farm-management research. The results of nearly all projects are being used extensively in teaching and extension work as well as by the planning committees.

This constant flow of information into educational channels indicates to some extent the close relationship which exists between research and extension in farm management. During the war period this interrelationship was especially noticeable, with senior members of agricultural economics staffs in many instances devoting most of their time to extension activities. Some of the work accomplished in connexion with war-time production might even be regarded as extension rather than research. Because of the special needs that arose, and the nature of the service rendered, there was little demarcation between the two. Even during normal times the knowledge that results of studies will be used almost directly for extension activities or for action programmes is reflected in the types of projects undertaken.

A similar difficulty is experienced in segregating some types of farm-management research from research in related phases of agricultural economics. The increasing complexity of farm problems has made necessary a division of work which will permit specialization of study, and in many cases it is difficult to determine just where the specialized

study ends and the broader field of farm management begins. Often the lines of division are more administrative than functional, and vary greatly among the various experiment stations and agencies engaged in farm-management research. In general, farm-management research is concerned with securing optimum farm efficiency through determination of the most effective combinations of enterprises and factors of production for various situations. Beyond this, it is safest to say that farm-management research consists of any studies made in the name of farm management, but closely associated with other phases of study. In using this broad definition it is not intended to minimize in any way the credit due to other phases of research.

During the war period, farm-management research in the United States has been restricted mainly to the continuation of long-time projects considered especially valuable because of their continuity, or to current projects of particular importance to the war-time production of needed agricultural projects. The loss of younger personnel to military service and the demand on older personnel to carry out various war-time responsibilities reduced research work to a low level in most states and prevented, temporarily at least, the completion of many promising studies.

Actual farm experiences, rather than controlled experiments, have from the beginning been the foundation of nearly all farm-management research. There are a number of reasons favouring such an approach, one of the important reasons being that studies based on the experiences of farmers have greater effectiveness in teaching and extension work. Since the original and basic function of farm-management research is to provide the farmer with information of practicability in the everyday workings of his farm, it is likely that farm records will continue to be the background of this field of research.

There are two principal methods of securing the information desired from the farm. The first is by means of records kept throughout the year by the farmer, usually in return for some service provided by the agency conducting the research project. These records may provide general farm financial and production data, detailed cost data for an individual enterprise, or detailed cost data for the entire farm, depending on the objectives of the project. The second method of collecting information is by means of survey records collected by the research worker through interviews with the farmer. The information so gained may have the same three degrees of detail as do the records kept by the farmer; however, it is seldom possible to obtain in this manner the

more detailed information with an acceptable degree of accuracy. The survey method of securing data has an advantage in that it permits the use of sampling techniques not feasible with the former method, but it also has a serious disadvantage in that even the general information so secured from farmers may lack the accuracy of records kept throughout the year. Farmers will usually give more credence to recommended changes based on well-kept records than those based on survey records. Since the primary objective of research is to effect changes in the organization and operation of farms, research methods in the minds of many cannot be dissociated from the response of farmers to the type of study which is being sponsored.

Both methods of gathering data have been used for many years. There have been changes in emphasis, however, as a result of changing objectives of farm-management research. The survey method retains its popularity in studies primarily concerned with agriculture as a whole and the impact thereon of the action programmes of the depression and war periods. Farm records continue to hold high esteem in studies directed to the farmer and his individual problems. An outstanding illustration of this esteem is found in the continuation and expansion of the farm financial and production records kept by farmers. Although primarily a service project to the co-operating farms, it has been the means of accumulating consecutive data on farm expenditures, income, and production for many years in a number of states. There has been no diminution in farm-accounting activity in many states even during the war. This is true especially in those states which have developed the farm-accounting work as a co-operative farm-management service with the farmers paying a considerable part of the cost. This work, which had its initiation in Illinois in 1925, has experienced a steady growth excepting an interruption by the severe depression of the early 1930's. In that state ten groups of farms numbering approximately 2,100 are now providing approximately 60,000 dollars a year toward the support of the work, with the remaining 25 per cent. of the total cost being provided from research and extension funds. Similar work is being conducted in Iowa, Kansas, and Minnesota, and recently Wisconsin has initiated a project of this type. A number of other states have carried on farm-accounting projects primarily research in character. The accumulation of continuous farm records from identical farms has greatly enhanced the value of such projects from a research standpoint.

Studies of the farm as a unit, an approach which has received

considerable attention in recent years, have utilized farm accounts as a major source of information. Analyses of the interrelation and relative importance of various farm practices and efficiency factors in their effect on the farm business as a whole have been made by several states. Extension workers, in emphasizing overall planning of the farm business, have made effective use of these studies drawn from farm accounts in demonstrating both the immediate and long-time benefits resulting from balanced farming.

A prominent example of the farm-as-a-unit approach is found in studies of the economics of soil conservation, a project initiated about ten years ago but greatly reduced in scope during the war. After a century or more of land exploitation, the droughts of the middle 1930's brought wide recognition of the importance of controlling soil erosion and replacing the exhausted fertility of the land. Because of the long-time aspects of the problem, farmers generally must be convinced of the economy of recommended soil conserving practices. Especially is this true in a country which has a large percentage of tenant operators who are primarily concerned with current income. Limited studies have shown that among the advantages to be attained from proper soil treatment are reduced costs of operation, increased crop yields, and long-time increases in capital values. Continuous farm accounts on farms originally identical but following different practices are proving especially valuable in these studies, and increasing attention is being given by farm-management research workers to this problem. In studies carried on co-operatively by the Soil Conservation Service and State Experiment Stations soil conservation studies have continued to receive attention even during the war, especially in Illinois, Wisconsin, Minnesota, Oregon, and the area covered by the Tennessee Valley Authority. Comparisons of productive trends on co-operating and non-co-operating farms in soil conservation have supplied convincing testimony of the values of the programme and at the same time have provided a basis for determining the most practical means to the desired end. Because the most reliable results are obtained from comparisons based on continuous records over a period of years on the same farms, these studies have been on a more permanent basis than studies of some of the other action programmes. In many other states the emphasis on soil conservation is reflected in various aspects of the farm accounting or survey work which is being carried on.

One of the longest-standing research projects in the United States,

a study of costs of production based on detailed cost accounts of all operations on a given farm, continues to be carried on in Minnesota, Illinois, and New York. While the expense of these studies has limited them to a relatively small number of farms (less than 100) in each of the states, the results of such studies over a long period of years have proved valuable in interpreting farmers' responses to prices and other influences affecting their production of farm products. Information gained from these studies has been used to good advantage in determining the interpretation to be placed upon the results of less complete accounts kept by the farmers in simplified record form, thereby making possible the more effective utilization of the less expensive methods of gathering data of, for example, hourly rates for labour and power, trends in labour input on crop and livestock enterprises, and hours of productive work performed per worker.

Another long-standing phase of research directed primarily to the farmer is the study of costs of production as related to income for individual enterprises. Such studies have been important in evaluating the changes in competitive positions of enterprises as a result of technological changes which affect one enterprise more markedly than another, and in determining the place for new enterprises in the farm business. There was especial need for such studies during war-time when expanded production of such crops as peanuts, castor beans, hemp, and other products resulted in their introduction into areas where they had not previously been established. With the conclusion of the war, interest is being manifested in studying the place of other enterprises, such as turkey production, in new areas. The indications are that enterprise-cost studies will always serve an important purpose in determining the introduction and competitive relations of new enterprises in an area and the economic significance of technological improvements which materially alter production costs of farm products.

A nation-wide research project of war-time significance was that of labour-saving studies initiated under a grant from the National Research Council. About a dozen State Agricultural Experiment Stations employed the technique of time and motion studies in connexion with the production of one or more farm products. This study was initiated to discover methods of saving labour through better production arrangements and techniques. It attained part of its significance because of the need of utilizing inexperienced labour on many phases of agricultural production during the war period. The project likewise

had its longer time value in serving as a basis for improving the arrangement of buildings and equipment to economize on the daily use of labour, especially in the storage of feed and the handling of feed and livestock products. In recent years, increased mechanization in the production of field crops has put livestock production at a relative disadvantage. No comparable progress has been made in handling livestock and livestock products. The major significance of this situation is that the changes in costs have gone so far as to make crop production more profitable than livestock production when related to the period 1921-30. The change in cost relationships is reflected, for example, in the relatively high subsidy being given for dairy production during the greater part of the war period.

The study of farm-leasing arrangements, while of interest to workers in the field of land economics, is probably now receiving more study at the hands of farm-management workers than during (and at the close of) the war. There has been a marked increase of interest in father-son business arrangements and profit-sharing agreements with wage-earners. In addition, the changes in cost and income relationships require re-study of most types of farm-lease agreements. The north-central states regional land tenure committee, involving co-operative efforts of thirteen mid-western states, has dealt with land tenure problems in part in the field of land economics, but its studies have placed particular emphasis upon equitable landlord-tenant, father-son, and wage arrangements. All these types of agreements must have a basis in farm accounts if equitable relationships are to be discovered and established.

During the past ten years farm-management workers have been increasingly called upon in connexion with farm problems of an area nature. Advances in technological methods and the impacts of action programmes have resulted in widespread reorganization of individual farm businesses, with the result that inter-regional competition in several major enterprises has experienced severe growing pains. In an effort to speed the readjustment between regions by aiding the farmer in fitting his farm business to the new conditions, a large number of farm-management research projects have been initiated on a basis of joint effort by several state experiment stations and in co-operation with federal action agencies.

For example, the use of larger and more expensive machinery in the wheat belt made desirable a re-determination of the most efficient size of the farm unit, as well as evaluation of the effects on other

regions of the exodus of farm families from that area when farms were increased in size. The expansion of cotton raising in the south-western states, where more efficient production methods could be used, placed the older cotton-producing states at a competitive disadvantage which emphasized the already existing problem presented by the low-income farms in the latter states. Increased production of roughage crops in the corn-belt states as a result of action programmes aimed at soil conservation gave rise to an expansion in the dairy industry in that region in direct competition with the established dairy regions of eastern states. Regional studies of these and other problems were undertaken by the several states in co-operation with each other and with the U.S.D.A. These projects were usually of a short-term nature as compared with the basic studies of internal farm management, and considerable use was made of survey-type records which permitted the studies to obtain a more accurate cross-section of the farms in an area. For many phases of these studies, however, the continuous farm records of the state farm-accounting projects proved a valuable source of information.

In evaluating state and national action programmes it was necessary to study their effects on individual farm organization and income, as well as their total effect on social conditions and total agricultural production and income. In order to produce results a programme must be workable on the individual farms and must not create more serious ills in other phases of agriculture than the existing ills it seeks to correct. Most studies of federal action programmes were undertaken co-operatively by the state experiment stations and the federal agency concerned. The results of these studies were primarily an aid to administrators of programmes in evaluating past effects and guiding future decisions; however, the results often flowed through educational channels as well.

Studies of the impact of the Agricultural Adjustment Act on farm organization and operation had provided, in pre-war years, information of value in anticipating the reactions of farmers to various methods of guiding production. Objectives of that Act had been the attainment of a more balanced farm economy and the prevention of an over-supply of market-depressing products. With the all-out demand for war-time food production, conservative farm organization was in a large measure cast aside in the interests of maximum output of essential products. Production goal studies were an important means of determining in which areas the output of various crops could most effectively be

encouraged with minimum permanent injury to the soil. In many areas the productivity level of the soil was greatly reduced during the war period, and, unfortunately, many farms lost topsoil which can never be recovered. Some normal productivity of the land can be regained if proper soil building practices are initiated. In some states, at least, production goals are in considerable favour as a means of emphasizing to farmers the requirements of a permanent agriculture. While these studies reflect on all departments of an experiment station, the major work has been carried on by farm-management research workers.

Another problem of national significance, in many respects closely allied with the conservation problem, is that of flood control. The Soil Conservation Service in co-operation with the Bureau of Agricultural Economics has undertaken a number of studies dealing with farm-management aspects of large flood-control programmes, such as the Tennessee Valley project. Prevention of flood-waters in the streams requires good farming practices in the watershed so as to prevent excessively rapid run-offs of heavy rains. The necessity of complete reorganization of many farms over a large area gives rise to problems of significance to both the individual farmer and to the economy as a whole. Some attempts were made in flood-control areas to conduct controlled experiments in the form of demonstration farms, but no matter what the actual reliability of the data, such experiments were somewhat disappointing because of the hesitance of farmers to accept results so achieved. In 1942, because of the loss of research personnel to the services and the increased demand for work in other phases of farm management, a sharp curtailment of flood-control studies was necessary.

Another group of studies which received considerable emphasis during the late 1930's but was reduced in scope during the war period dealt with the special problems facing the perennially low-income farms. These farms, because of their permanently inadequate income for the farm family, present a socio-economic problem which in some areas has become a major concern of the nation. Limited adaptability of the soil plus a lack of capital and credit for expansion and improvement make the ordinary recommendations for increasing farm efficiency largely inapplicable on such farms. Purely economic remedies such as extensive combination of farms and the resulting displacement of families are opposed on social grounds, and several research projects have been initiated by the Farm Security Administration and the

Bureau of Agricultural Economics to find an acceptable alternative. The problem is not yet solved; in fact, the inability of such farms to utilize many of the more recent technological improvements is making their competitive disadvantage increasingly severe. This disadvantage, less apparent under the favourable price conditions of war-time, will become more evident as agriculture and the nation return to more normal conditions.

With the end of the war and the rebuilding of research staffs to normal strength the outlook for farm-management research is both promising and challenging. Farmers are looking more and more to research workers for answers to the increasingly complex farm-management problems. Studies of the farm as a unit, based on continuous records on large numbers of farms, will undoubtedly continue as a major phase of farm-management research. Improvements in methods of assembling and evaluating data will give these studies added significance, and the results will find ready use in educational channels. There is a growing demand on the part of farmers for the farm-accounting services and the accompanying evaluations of results, and many experiment stations are planning expansion in this type of work.

Soil conservation considerations in a balanced farming plan are being increasingly realized by farmers on the better land as well as by those on the land already seriously injured. While this realization reflects favourably on the limited studies of soil conservation already completed, it also presents a challenge to research workers to make more exhaustive studies. Many soil conservation projects which were interrupted by the war are being reinstated and expanded by the states and the Soil Conservation Service, and additional projects are being planned for the near future. As the benefits to be derived from soil-conservation practices are shown more clearly and conclusively, it will become less and less difficult to reconcile the aims of the individual farmer with the long-time objectives of a permanent agriculture.

There is a growing trend in farm-management research, as in other phases of agricultural economics, toward co-operative efforts among experiment stations in undertaking projects of a regional nature. This approach not only produces results of greater significance; it also economizes on valuable research time by avoiding duplication of work among the states involved.

A major depression and a major war in the past two decades have

tested farm-management research under a wide range of conditions. Weaknesses have been discovered and can now be corrected; strong points have been realized and can be put to greater use. In the progress of agricultural science, farm-management research is playing an increasingly important role.