## How Cooperative Activities of Sugar Companies, Agricultural College, and Beet Growers Function in the Farmers and Manufacturers Beet Sugar Association

M. J. BUSCHLEN

The Farmers and Manufacturers Beet-Sugar Association was founded in order to promote and insure cooperation and goodwill among three distinct groups: The public, the beet growers, and the beet-sugar processors. Just as various cooperative bureaus have been established during our present national emergency to utilize and coordinate the forces and resources of our Nation, thus the association was created as a result of the industry's emergency—the depression of the early thirties.

Our organization consists of four major departments: The Legislative which deals primarily with legislation relating to sugar beets; the Educational-Advertising which is responsible for public representation; the office of the Growers' Field Secretary, and the Agricultural Department, the activities of which will be discussed in this paper. Each of the above, distinct within itself, is inter-related. However, this paper will present only the activities of the agricultural department.

To understand the far-reaching extent of the agricultural program and its cooperative functions, we shall discuss each of the activities as a separate unit or phase. I believe that one of the best ways to show the inter-relationship of the sugar companies, agricultural colleges, and beet growers is to illustrate, by example, some of the projects which are conducted jointly to the mutual benefit of all concerned.

One of the first projects which was undertaken was to make an extensive survey of all farm practices which were and are being employed by the beet growers in the production of the sugar-beet crop. The fieldmen of the various sugar companies collected information over a period of 3 years from every farm in the area which included such items as: Type of soil on which the beet crop was being grown, the cropping history of the field, the amount of manure (barnyard and green) and fertilizer used, the time and rate of seeding, the time

Agricultural Supervisor, Farmers and Manufacturers Beet Sugar Association, Saginaw, Michigan.

of blocking, thinning, and frequency of cultivations. A count was made of the plant population per acre and note made of the disease and pest troubles. This information was combined with the yields from these fields.

The farm management department of the Michigan Agricultural College made an intensive study on 279 farms of the cost of raising sugar beets and the relationship of each farm practice as it influenced yield per acre.

The summary of this report revealed that certain agricultural practices which were being followed could be improved to reduce the cost of raising a crop of beets and consequently to increase the net return per acre from this crop.

A combined summary of the extensive study conducted by the Association and the intensive report of the agricultural college formed the basis for many constructive suggestions to the beet growers of the eastern area. This information was made available through publication in the Sugar Beet Journal, many farm magazines, and most effectively by a discussion of this summary in group meetings of farmers throughout the territory.

One of the most effective means which we have found to disseminate this information is through the use of moving pictures. With the help of the agricultural colleges in Ohio and Michigan, several films have been produced showing the benefits to be derived from following the improved agricultural practices which have been discovered through experimentation and demonstrational plots. These films show actual experiences of the farmers themselves.

The United States Department of Agriculture through their personal representatives and also in cooperation with the experiment stations has been developing, testing, and demonstrating new and improved types of sugar-beet seed. The Beet-Sugar Association has cooperated in this work by providing the land and facilities for carrying out extensive tests of these new and improved types of beet seed produced by the United States Department of Agriculture and the several experiment stations. In many cases the farmers have taken small quantities of the seed, planted it in their regular fields, cared for it in the same manner as the regular commercial crop, and then have taken the time to harvest accurately and to record the results of the performance of these new and improved varieties.

Then, too, the Eastern Seed Committee of the Farmers and Manufacturers Beet-Sugar Association has been responsible for securing on an organized basis an adequate supply of seed for eastern growers. Over 2,000,000 pounds of seed were grown in 1941 for the eastern

204

account by western seed producers. Not only has the effort of this group assured the eastern sugar-beet farmer of an adequate supply of seed, but the proper kind of seed has been provided. Variety tests have been conducted since 1935; the best seed for the eastern area has been selected from 30 to 40 varieties.

A summary of all of these seed studies has formed the basis for the selection of the varieties of seed which we are now producing in commercial quantities by the overwintering method for use ha the eastern area.

For a number of years the agricultural colleges have been making a study of the proper kinds and amounts of fertilizers which can be profitably used on the sugar-beet crop. The Beet-Sugar Association and its several member companies have been instrumental in inducing the farmers of the area to use the proper kind of fertilizer in increasing quantities. By admission of the farmers themselves, this increased use of the proper kind and amount of fertilizer has had a tendency to increase the net return per acre from the sugar-beet crop.

The agricultural colleges have also been studying the use of certain minor elements in relation to the production of the sugar-beet crop. The extension specialists have carried this information to the farmers of the eastern area. The many instances the use of small quantities of boron, copper sulfate and a few other minor elements have proved to be extremely profitable to the farmers of this area.

Periodically, the agricultural colleges publish up-to-date bulletins containing the latest information relative to a profitable production of the sugar-beet crop. These are distributed to each beet grower in the eastern area.

One of the accomplishments has been research in soil organic matter. Tn 1938, through the suggestion of the agricultural department of the Farmers and Manufacturers Beet-Sugar Association, the three Ohio processors established a research fellowship wdth the Ohio Agricultural Experiment Station. Since the basic need was a study of the productive capacity of the soil itself in relation to the production of sugar beets, the experiment station was asked to secure a man who could accomplish the work. The particular research problem chosen was "A Study of the Effect of Soil Structure on the Production of S ugar Beets on Clay Soils." The selection of this problem was made because the common experience of beet growers on clay soils has indicated that the growth of sugar beets is better during those seasons when the tilth of the soil seems most manageable.

The two main questions to be answered by the investigation were: (1) What are the most desirable air and water relationships for maximum beet production on the clay soils of northwestern Ohio, and (2) What practical methods may be used for obtaining and preserving a favorable soil structure which will make these desirable airwater relationships possible?

It has been determined that (1) much of the heavier soils in northwestern Ohio have deteriorated in structure after years of continuous cropping, during which time very little organic matter has been returned to the soil; (2) that the deterioration has been a limiting factor to beet yields in late years, since with sugar beets, where the root itself is the crop, the physical condition of the soil is of the utmost importance; (3) that the restoration of suitable soil structure is a question of the application of corrective steps covering not a period of but 1 or 2 years, but of several years, and (4) that while further study may reveal exactly what the beet-producing farmer might do to improve yields, it is evident now that organic matter such as crop residues, manure, and green manure crops will help greatly.

These findings are definitely a good beginning. A continuation of the test will undoubtedly be far reaching, for what is learned here is basic as regards soils and conceivably has wide application.

Another accomplishment of the agricultural program of the eastern beet-sugar industry is the establishment of a cooperative committee of representatives of Michigan State College and the industry, which has encouraged the inclusion of sugar beets as one of the major muck-crop studies at Michigan State College, where formerly they were minor, and which established an extensive crop-rotation study in cooperation with the Michigan Experiment Station.

From the detailed study of sugar beets on muck, advanced fertilization methods have been evolved. It has been found that application of ordinary salt in combination with proper fertilizer gives marked increases in yields. This principle is capable of wide application, since a considerable part of the beet acreage in the East is on muck land.

From the crop-rotation study specialists hope to learn the role of legumes in the sugar-beet rotation, which crops should immediately precede the beet crop, and the answer to many other problems which cannot now be solved from experimental data at hand.

The cooperative committee was also responsible for inducing the college agricultural engineering department to work on sugar-beet machinery.

The agricultural colleges in Michigan and Ohio set aside 1 week each winter to be known as "Farmers' Week." Every phase of agricultural production is discussed in the light of the newest and bestknown practices. Each of these colleges has set aside 1 day of the week which is devoted entirely to a discussion of sugar-beet problems. The farmers of the State may listen to the regularly scheduled formal discussion, and participate in round-table discussions of certain problems. The sugar industry is given an opportunity to present its views in relation to the production of the sugar-beet crop. Farmer representatives are also given an opportunity to present their views of the situation.

Through these meetings the various groups who are working on agricultural problems have been able to realize the needs and desires of each group.

Some years ago leafspot became a serious problem in the eastern To overcome this menace, work went ahead in two fronts: The area. development of blight-resistant seed varieties and the control of blight by dusting and spraying of existing varieties. The farmers and the sugar industry of the eastern area were all interested in having a study made on how to control leafspot by dusting and spray-Again the agricultural colleges were called upon to supply the ing. technical information on how to proceed with a solution of this problem. The farmers provided the beet fields, and the industry through the Association provided a portion of the finance to carry on this work. As a result of this work on dusting and spraying, suitable formulas have been developed. Through cooperation of the machinery manufacturers, machines were perfected to make the proper application of the material. Now commercial-scale dusting is an accomplished fact.

A cooperative program such as has been started in the eastern area is only possible when all parties concerned are willing to accept suggestions from the other and to proceed with a unified thought in mind.