

As an article of food the use of the soy bean in the United States has been very limited. For many years a few food companies have manufactured special soy-bean flour products. The number of such concerns producing soy-bean food products has increased to a considerable extent during the last few years. Soy beans are now being made into breakfast foods, crackers, wafers, soy sauce, bean curd, soy flour, and special flour preparations for various purposes. One of the most recent developments is the manufacture of soy sauce and bean curd from domestic grown beans. This has been found a most profitable industry in some parts of the Corn Belt, and soy sauce has now a fairly extensive market in the United States.

#### Improved Production Methods

Increased acreage and greater utilization of the soy bean have brought about improved methods in planting, culture, and harvesting. Implement manufacturers, who in the past took no interest in the soy bean, are now actively engaged in a study of the planting, cultural, and harvesting problems of the crop. The development of an efficient method of harvesting the seed crop has been one of the serious problems connected with the production of soy beans. Many types of machines are now on the market, ranging from the single-row harvester to broadcast harvesters of the beater type and the combine harvester like those used in harvesting wheat and other small grains.

Because of this rapid increase in the importance of the soy bean, State experiment stations have greatly extended their investigations of the different feeding problems, such as the value of soy-bean silage, hay, grain, pasture, and oil meal. One of the most outstanding results of this work has been the use of a mineral mixture with the grain and meal. Extensive feeding trials with hogs and poultry have shown that when minerals are added to a soy-bean ration the results compare favorably with those from a ration of tankage and meat scrap.

In the last decade the soy bean has advanced from a position of minor to one of major importance. Previously soy beans were grown only occasionally, usually as a substitute crop when clover or some other crop failed. At the present time the plant is grown regularly for hay, grain, and pasture, and with corn as silage.

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### **S**OY-Bean Rotation Increases Rice Yields Greatly

Crop rotation has not been a factor in developing the rice industry in southwestern Louisiana. The pasturing of rice fields after several years of cropping has been the only recognition of the principle of crop succession in this section. Experience has shown that this method is not effective in controlling weeds, especially red rice, the worst weed of the southern rice fields. Red rice seed may remain viable in the soil for at least four years and will germinate only when brought near the surface by plowing and other tillage operations.

Experiments conducted for a period of 14 years at the rice experiment station, Crowley, La., show that weeds can be controlled and

may be eradicated by growing rice in rotation with soy beans. The success of weed control depends upon thorough cultivation. Cultivation that permits weeds to produce seed is not effective. Tillage that is necessary to prepare land for soy beans also aids greatly in reducing weeds. The land should be plowed during the previous winter to a depth of at least 5 inches and disked several times in spring before seeding. By repeated light diskings several germinations of red rice may be obtained and destroyed before the soy beans are sown.

Experiments and the experience of rice farmers who are using this rotation indicate that the Biloxi is better adapted to rice field conditions than any other variety of soy beans that has been tested. (Fig. 213.) This variety should be sown in rows 4 feet apart at the rate of 30 pounds per acre. Seeding may be done with an ordinary corn planter adjusted to drop one or two seeds from 2 to 4 inches apart in the row. The seed should be sown just beneath the soil surface. Deeper seeding is likely to result in a poor stand. Sow not earlier than the last week in May and preferably not later than



FIG. 213.—A field of Biloxi soy beans growing on typical rice soil in southwestern Louisiana. This field has been so thoroughly cultivated that there are no weeds in it

June 15. Thus sown, the plants are relatively short and bear short limbs that fruit rather heavily. Such plants are easily cultivated and can be harvested with machinery without appreciable loss. Early seeding has little effect on date of maturity, which with the Biloxi normally occurs in early November.

Cultivation should begin as soon as the plants can be readily traced in the row. It may be done with a riding cultivator. By using the disk and other attachments alternately this implement will keep the soil in a condition that will promote the germination of red rice and other weed seeds, the growth from which can be easily killed by later tillage. Cultivation should be frequent and continue as long as weed growth is noticeable.

Weed control is not the only advantage of the soy-bean rotation. Plowing under the soy-bean plants after the beans are harvested adds to the soil a large quantity of organic matter which decomposes rapidly when drainage is good. The upturned soil under these conditions readily responds to tillage in preparing a suitable seed bed for rice. Good seed-bed preparation insures a more thorough destruction of weeds, better germination, a better stand, a stronger root

growth, and larger yield. When the soil is deficient in organic matter such a seed bed is not easily obtained even with extra tillage. Soil fertility also is greatly increased by the decomposed vegetable matter. On the typical rice soil of Louisiana the soy-bean rotation is giving an average acre increase of 10 bushels of a better grade of rice, which is a greater return than is being obtained by the use of commercial fertilizers.

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## **S**oy-Bean Standards Promulgated for Commercial Crop

The phenomenal increase in the production of soy beans during recent years has created widespread interest in this commodity. Production in the United States increased from 2,500,000 bushels in 1920 to 6,517,000 bushels in 1926. With this increased production the saturation point in the demand for soy beans for seed purposes has been reached, especially of the staple varieties.

The commercial possibilities of the soy bean, however, offer a potential outlet for a supply many times the present surplus above seeding requirements. Several mills are now crushing soy beans for oil and meal and others are being built or equipped for this purpose. Research chemists are studying the value of the soy bean and its products for food and other uses, together with methods of converting them into the proper form for such uses. The extent of these commercial uses seems to be limited principally by the supply of the raw product. Production above seeding requirements is increasing steadily and, with the general employment of more efficient and economical methods of growing and harvesting the crop and preparing it for market, the annual supply available for industrial uses should be increased manifold.

With the commercial supply of a comparatively new agricultural product increasing there naturally arises a problem in marketing. Although there may be an adequate outlet or market for the crop, a definite basis for price quotations is essential in order to insure more equitable returns to the producer and to expedite movement of the crop from the farms. Uniform quality standards are the key to the solution of this problem.

### United States Standards Issued

After extensive studies of the various phases of the soy-bean industry, United States standards for soy beans were issued in September, 1925, and recommended for use in the grading and marketing of this commodity. These standards were used as a basis for Federal inspection of the 1925 crop of soy beans at original shipping points in eastern North Carolina with gratifying results. Favorable reaction from growers, shippers, wholesale seedsmen, and oil mills to this initial use of the standards resulted in a demand that the inspection service be expanded in North Carolina and that it be extended to other producing States.

Based on the use of the standards and further studies of the industry, slight revisions were made effective September 1, 1926, chief of which is the addition of a supergrade to take care of extra