Experimental Test With Vegetable Soybean Varieties

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The soybean is fast becoming one of the major cash crops in the corn belt. Although grown for centuries in the Orient, it has only recently sprung into such prominence in the Corn Belt of the United States. Food experts and chemists have found a wide variety of uses for the soybean in the human diet, and they are constantly adding new uses to this list. In a pamphlet published by the Home Economics Department of the University of Illinois, they list a number of recipes for cooking soybeans for the human diet.

However, because of the oily nature of the common strains of the soybean grown commercially, the food products consist in the main of items manufactured from processed beans, from which the oil has been extracted. As a result, the American people still rely upon the navy, or soup bean, for the more common culinary uses.

Is it possible to develop strains of vegetable soybeans adapted to our growing conditions, which will yield beans for human consumption, more palatable and nutritious than the navy bean now so widely used? Might not the quality of the soybean products already in use be improved by such varieties? Will these varieties perhaps prove more resistant to insect and disease damage, and adverse weather conditions than the navy bean or the commercial strains of soybeans now in wide use?

In seeking the answers to these and other such questions about vegetable soybean varieties, plant breeders are growing and studying many strains and varieties. From one such plant breeder, Dr. Earl Sieveking of Funk Bros. Seed Co. the Agriculture Department of I. S. N. U. secured seed samples of 18 varieties of soybeans. These particular varieties have been selected from many because of greater adaptablility to growing conditions in this section. As all of them are still in the experimental stage, the varieties are spoken of by number instead of variety name (with one exception).

In the large gardens at the State Normal Experimental Farm, Mr. Douglas' vegetable crops class planted and tended a small plot of each of the 18 strains available. The soil upon which the beans were grown was plowed out of clover sod, early in the spring, and was well worked down prior to the planting of the beans in the early part of May. In spite of very adverse weather conditions, most of the varieties grew off quite well, and yielded a good crop of soybeans.

The varieties were studied throughout the growing season, and at harvest time, the results of these tests were carefully tabulated. Among the characteristics observed in this study were the following: height of mature plant, lodging resistance, earliness of maturity, degree of shattering, number of pods per plant, number of beans per pod, the yield per plant, the color of the beans, the moisture content, and the test weight per bushel.

This data for each variety was obtained and carefully recorded in tabular form. The beans were harvested and hulled by hand, so that more accurate results could be obtained.

Among the varieties grown wide variations were found in some of the more important characteristics from the standpoint of the soybean producer. For example, in one variety, it was estimated that 20 per cent of the beans had shattered out of the pods prior to harvesting, while in some of the better strains, little or no shattering had taken place. When the characteristic of lodging was considered, one variety had 44 per cent of its stalks lodged, while in some of the varieties more resistant to lodging, every plant was standing erect and straight at time of harvest. A wide difference in the rate of yield was another important fact brought out in the experiment. Obviously, those high-yielding varieties, providing quality and other characteristics do not vary too much, are more desirable from the standpoint of the producer. The most prolific of the strains averaged 77 pods per plant, while the poorest in this respect had but 29 pods per plant. Color is an important characteristic in beans which are to be used for cooking. The color of the experimental varieties varied from light cream to brown and black. For most culinary uses the lighter colored beans would be preferable.

Undoubtedly a study of the cooking qualities of the various varieties would have added much to the value of the tests, had we been able to carry it on. Such items as flavor, texture when cooked, speed of cooking, appearance when cooked, and taste could be tested and recorded in this part of the study.

In working out a basis for comparison of the varieties, considering the data obtained, we worked out a performance rating based upon what we considered three of the most important characteristics. These were *yield per plant, resistance to lodging, and resistance to shattering.* The total yield was given three times the stress that the other two factors were given.

The average rating was approximately 100, with a high of 127, and a low of 71. The best three varieties based upon this rating are as follows:

No. 1—84939. A medium maturing variety, with rather tall plants, bearing on the average 76 pods per plant. It had very little shattering, but some lodging. Beans a light yellow in color.

No. 2—84916. Medium early maturity, plants rather medium in height, no shattering, and very little lodging. Beans a greyish green color, with black eyes.

No. 3—Higan-Mami. Medium in maturity, plants of medium height, bearing 77 pods per plant, the most prolific of the varieties. No shattering, and a slight amount of lodging. Beans a light yellow in color.

During the coming season, it is the plan of the Agriculture Department at Normal to enlarge and continue this experiment by planting larger plots of these varieties, and others which may be obtained. Careful study will be made, and if a sufficient quantity of each variety is produced, culinary tests will be added. It is hoped that from this test and similar tests carried on elsewhere that a worthwhile contribution will be made to the plants which produce nutritious and palatable food for human consumption.