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THE SOYBEAN

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FIELD OF SOYBEANS ON THE OHIO STATE UNIVERSITY FARM

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THE SOYBEAN

The soybean crop is being more generally grown each year as its merits become better known. Being a legume it makes use of the nitrogen of the air and thus helps to maintain the nitrogen supply of the soil. It is also valuable for feed and as a cash crop.

Uses.—The crop is used as a hay crop, for silage when mixed with corn, for hogging off with corn, and as a seed crop. As a hay crop the soybean produces yields equal to those of clover, and the hay is equal both in nutrients and in palatability to good quality clover hay.

A common use of soybeans is for a substitute hay crop when clover fails. They are also replacing oats to some extent in the four-year rotation, corn, oats, wheat, clover. In many parts of Ohio soybeans are more profitable as a seed crop than oats. The three-year rotation—corn, soybeans, wheat—is also used. In this the soybeans are harvested for seed and the wheat land is sown to sweet clover to be plowed under the next spring for corn. The latter would seem to be a desirable rotation, since it includes two leguminous crops in three years, and a cash crop every year. If hay is needed, part of the soybean acreage can be harvested for hay and the rest for seed.

Soil and climatic requirements.—Soybeans will grow successfully in any part of Ohio and on almost any soil, but are perhaps at their best on loams. They do best on well drained fertile soils, but will endure well both wet and drouth. They will grow on soils too acid for red clover, but are helped by an application of ground limestone. Soybeans need a liberal supply of phosphorus and unless the previous crop has been well phosphated 200 pounds of acid phosphate should be applied per acre.

Inoculation.—When growing soybeans for the first time they should be inoculated. No other legume will supply the right kind of bacteria.

There are several methods of inoculating soybeans, any one of which should give good results, if properly carried out. A thin soup of inoculated soil in water may be stirred among the beans, after which they should be dried in the shade, as the sun's rays are injurious to the inoculating germs. Another method is to dampen each bushel of seed with water in which a little glue has been dissolved (1 teaspoon to a pint of water). Pile the moistened seed on a clean floor or place in a tub and sift inoculated soil over it, stirring until each bean is well covered with a thin coat of dry earth. The beans may be drilled immediately or sacked up as desired.

The soil-transfer method of inoculation is also recommended. Inoculated soil may be secured from a field on which soybeans had been successfully grown. About 50 to 100 pounds per acre is sufficient. This may be drilled in the row with the beans.

Commercial cultures may also be used, according to the directions supplied with them.

Time of seeding.—Soybeans require the same sort of seedbed as corn, hence plowing is necessary. They should be planted when the ground is well warmed up, preferably just after corn is planted. One to two weeks after corn planting is the most common time to plant soybeans, and they may be planted successfully three to four weeks later.

When planting soybeans with corn for silage or hogging, both crops should be planted at the same time. Hence it may be best to leave this field until the last so that the ground may be as warm as possible for the beans.

Manner and depth of seeding.—Soybeans are usually planted in rows 28 to 30 inches apart, leaving just room enough to cultivate. Plants should be 2 to 4 inches apart in the row. More than 36 inches between rows will reduce the yield materially. The grain drill is used, stopping up all but every fourth hole unless solid drilling is wanted. For 28- to 32-inch rows about 3 pecks of seed per acre are required and for solid drilling about 6 to 8 pecks.

Solid drilling eliminates cultivation and makes finer stemmed hay, but weeds are more likely to bother than with cultivation.

Break the crust.—Soybeans cannot come up thru a hard crust. They will literally break their necks in trying it and then die. Therefore a firm, moist seedbed in which they will start quickly is important and they should be planted only about 1 inch deep or enough to put the beans into moist soil. If a crust forms it should be broken with a harrow. In warm, moist soil soybeans will come up in 3 or 4 days.

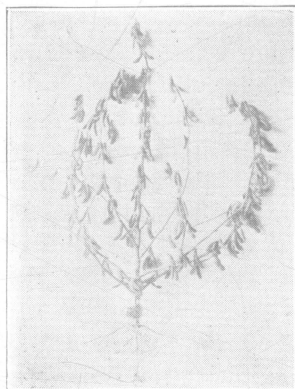
For silage and hogging.—When planting soybeans in corn for either silage or hogging the beans are planted in the corn row at the same time that the corn is planted. Preferably the corn and beans are drilled with a corn planter with a special hopper for the beans. Such attachments are on the market. Planting 3 or 4 beans to one corn kernel is a satisfactory rate, requiring about $\frac{1}{2}$ peck of beans per acre. When beans and corn are hogged off together the beans help to balance the corn ration and reduce the amount of tankage necessary.

Do soybeans reduce corn yields?—Opinions differ widely as to the effect of soybeans on the yield of corn when the two are planted in the same row. Some men say they reduce the corn yield, others say they do not reduce it, and others say they even increase corn yields.

Experiments seem to indicate that in a dry season corn yields are reduced somewhat, but in a wet or favorable season there is little if any loss in yield of corn. A one-year experiment at the Ohio State University in 1919 gave for drilled corn alone 53.5 bushels of corn per acre and 49.2

bushels when beans were drilled with the corn. To offset this loss of 4.3 bushels of corn there were produced on the same land 6.6 bushels of threshed beans. For feeding purposes the 6.6 bushels of beans are worth much more than 4.3 bushels of corn.

Harvesting for hay.—Soybeans for hay should be cut when the pods are well formed and before any leaves have fallen. They should be mowed after the dew is off, raked when well wilted, and allowed to cure in windrow and cock until ready for the haymow. They need about the same curing as clover. Yields similar to those from red clover may be expected.



Soybean plant, showing the abundance of seed pods

Harvesting for seed.—The beans should stand until most of the leaves have fallen and the pods are about mature but not shattering. They may be cut with a mower with windrowing attachment, or with a binder. Cutting should be done when the dew is on, or on a cloudy day. The windrows may be allowed to cure on the ground, then taken up with a hay loader and stacked or put into a barn to be threshed later. If desired, the beans may be shocked and threshed from the field. Care must be used in handling, as they shatter easily when dry.

Threshing.—An ordinary grain separator may be used by substituting a larger pulley at each end of the cylinder to reduce the speed of the cylinder about one half and run the separating machinery at normal speed. Blank concaves or a single row of teeth will avoid cracking the beans. Soybeans must be thoroly dry before being stored in quantities or they will heat and spoil.

Yields of 18 to 25 bushels per acre may be expected from a good variety on good soil. As many as 35 bushels are sometimes secured.

Varieties.—Many soybean failures are due to planting the wrong variety. Very late varieties such as Mammoth Yellow are not suitable for Ohio. A few of the good varieties for particular purposes are these.

For seed.—Ito San, extra early maturing, yellow beans.
Manchu, early maturing, yellow beans.
Elton, early maturing, yellow beans.
Ohio 9035, medium maturing, brown beans.
Mongol, medium maturing, yellow beans.

For hay.—Medium Green, Ito San, Mongol, Ohio 9035, Peking, Manchu, Elton.

For silage.—Hollybrook, Mongol, Ohio 9035, Haberlandt, Peking.

For hogging.—Manchu, Elton, Ohio 9035, Mongol, Ito San.