Growing FIELD BEANS

THIS CROP WILL FURNISH EXTRA CASH INCOME
IN SOME NORTH DAKOTA AREAS

SOIL

Field beans are not difficult to grow. Most varieties are able to withstand reasonable periods of heat and drouth and will usually mature under North Dakota conditions. The plant will do well on almost any type of soil, but is better adapted to the lighter loam soils than to heavy clay.

PLANTING DATE

The bean is a warm season plant. The seed does not germinate well when planted in cold soil and very often when planted too early the seed will rot. The preferred planting date will be when the weather and soil are warm and the danger of injury to the frost-tender plants is past. This usually means about May 15 or later.

PLANTING

The seed bed should be firm and free from large clods or lumps. The depth at which the seed is planted may vary a little depending upon the character of the soil. It is desirable to plant a little deeper in sand than in clay. A satisfactory planting depth is from 1-1/2 to 2 inches, in rows about 2 feet apart. In planting a small patch about 1/2 pint of seed is required for a 100-foot row. For general field planting the amount of seed required to plant one acre ranges from 20 pounds to about 40 pounds, depending on the distance between the rows and size of seed. Some growers like to seed heavy allowing for some loss from harrowing after the beans have emerged.

A corn planter or an ordinary grain drill may be used to seed beans, spacing the rows the desired distance for the cultivator. Under dry land conditions the crop is sometimes planted in hills--allowing for cross cultivation--in which case less seed is required.

Where beans have not been grown before, inoculation is advisable to insure the presence in the soil of the proper bacteria for storing nitrogen.

EXTENSION SERVICE
NORTH DAKOTA AGRICULTURAL COLLEGE AND U. S. DEPARTMENT OF AGRICULTURE COOPERATING
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VARIETIES

There are several varieties of field beans, but the best known white sort for planting in North Dakota is the Great Northern. The University of Idaho strains of Great Northern are preferred because of greater disease resistance. The original Great Northern bean came from the Hidatsa Indians and was introduced by Oscar H. Will and Company, Bismarck, North Dakota, many years ago. It is widely grown by commercial bean growers and has largely replaced the common white navy as a shell bean.

The common white navy, although not as popular among northern and western growers, is still highly favored by eastern bean growers. Michelite is the leading variety of this type.

Some home gardeners may also desire a colored dry bean. There are several varieties of these, although the most popular is probably the ordinary red kidney bean.

Where production is intended for shipping to eastern markets, a uniform quality white bean will have preference. Growing one variety in a community will simplify the problems of marketing.

CULTIVATION

Like all other row crops, beans require frequent shallow cultivation. It is especially important that weeds be kept down between and in the rows during the early period of plant growth. During this period of growth competition from weeds is greatest, and having the soil in good tilth is needed. Beans should not be cultivated when wet.

HARVESTING

The best time to harvest beans is when the larger part of the pods are mature, but before shattering occurs, and before many of the leaves have dropped off. Do not wait until all the pods are thoroughly ripe or much seed will be lost.

Harvesting should preferably be done only when there is reasonable assurance that the weather will remain fair. On small acreages the common method of harvesting is by hand pulling. On large acreages a bean harvester is used. After harvesting the vines are put in small piles to cure for a few days before threshing.

THRESHING

Small bean patches are still threshed by the old hand flail method. Where the bean patch is of larger size, the modern grain thresher or combine may be used in threshing the crop, providing a part of the concaves are removed and the speed of the cylinder reduced so that excessive splitting of the seed does not occur. This can be accomplished by the use of proper pulleys, allowing for a reduction in the cylinder speed, but permitting the rest of the machinery to operate normally.

Bean threshers and hullers are available but these usually represent too large an investment for the small scale bean grower.

YIELD AND MARKET

The average yield of beans in the United States is about 12 bushels per acre. Much of the bean crop in the United States, however, is grown in states with a higher rainfall than North Dakota or under irrigation, which assures a larger and more constant yield. For the 10-year period ending with 1937 the average yield in Minnesota was about 5-1/2 bushels per acre. In Montana where much of the crop is grown under irrigation the average yield for the same period was about 17 bushels. Development of irrigation in North Dakota should increase the interest in and the possibilities of commercial bean production.

If production is for the eastern markets, a sufficient acreage is necessary to insure economy in shipping. Where the crop is grown extensively, assembling and processing plants are usually developed to handle the crop most efficiently.

POSSIBILITIES IN BEAN GROWING

Beans as a profitable commercial crop are not without possibilities in North Dakota. But because of frequent failure to mature fully, especially on heavy soil, small acreages should be grown first to test local adaptability before planting large areas.

Every home garden, however, should have a plot large enough to supply the family table. Beans are a palatable, nourishing food when properly prepared. They deserve a place in the working man's diet.

INSECTS

Under North Dakota conditions, beans normally are not subject to serious insect attack.

The common adult blister beetles frequently cause some foliage injury by their feeding activities. These insects when in their immature or larvae form feed on grasshopper eggs. They are difficult to control because they commonly gather in large numbers and suddenly settle into plantings. Severe injury results before their presence is recognized. When observed, they can usually be killed by a dust of 1 part barium fluosilicate ("Dutox") and 4 parts common wheat flour applied directly to infested portions of the planting.

Seed maggots occasionally cause severe injury to beans just as the seeds are germinating. These small maggots, which develop from eggs deposited on or near the beans at seeding time by a small fly, feed upon the germ or the very young seedling. Control measures involve principally cultural measures, including packing or firming of the soil surface immediately after seeding, and avoidance of planting on fields recently manured.

Plant lice, or bean aphids, occasionally occur in injurious numbers. These small sucking insects crowd together in clusters upon the stalks and underside of leaves, sucking out the plant juices, and causing severe stunting or eventual death of the infested plants. A nicotine-sulfate spray or dust, applied immediately to the first infested plants observed, will usually prevent development of infestations, especially if weeds along the margins of bean plantings are kept cut throughout the season.

DISEASES

Bacterial bean blight is probably the most common disease affecting beans in this area. This disease, which is carried in the seed and upon bean refuse from a previous crop, may affect the crop at any stage of its growth. Large brown blotches, often bordered by a yellow or reddish halo are produced upon the leaves, which may later die and cause complete defoliation. Other symptoms include a girdling of the stem at one of the lower joints, and the development of indefinite, water-soaked spots upon the pods. No effective control measures are known other than the use of disease-free seed. The disease causing bacteria are spread during wet periods; accordingly cultivation of the crop should be postponed during all periods when the crop foliage is wet. Michelite is relatively resistant to this disease and like the Idaho strains of Great Northern it is also resistant to bean mosaic.

Bean anthracnose is another serious disease not infrequently encountered. Injuries caused by this disease are somewhat similar to those characteristic of bacterial bean blight infection. Black sunken cankers appear on the pods, with a salmon-colored ooze in the center of the lesions. Similar spots occur on the cotyledons of young plants and on the stems. Conspicuous blackened dead portions of veins occur on the underside of the leaves. Destruction of all old bean refuse in the fall, planting on well-drained soil, and the use of disease-free seed are all important measures for avoiding this disease. Robust Pea bean selections are fairly resistant to most strains of the fungus causing bean anthracnose.

Certain other bean insect or disease pests may occur in plantings of this crop. Identification and specific control recommendations of infections observed may be secured by sending specimens of the injury and any insects concerned to the North Dakota Agricultural College with a letter describing the extent of the injury and any general comments regarding it.

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