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Field Beans
for Minnesota

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TWENTY THOUSAND ACRES of field beans in 1943 is the goal set for Minnesota by the United States Department of Agriculture. This is four times the acreage of beans reported for the state in 1942.

To stimulate production, the Department of Agriculture has agreed to support the market for white pea and Great Northern beans at $6.50 per 100 pounds for U. S. No. 1 grade wtih appropriate adjustments for other grades. These prices are for beans cleaned and bagged in new cotton or burlap bags, in carload lots, at country shipping points.

To meet the acreage goal, many new growers will be producing field beans in 1943 and will want information on the handling and marketing of this crop. This folder has been prepared to meet their need.

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Yields and Cost of Production

Commercial field bean production in Minnesota has been confined largely to the light sandy soils in the east central part of the state. Yields have averaged around 7 to 9 bushels per acre. Beans weigh 60 pounds per bushel. On the adjoining more productive lands and on good corn land in other parts of the state, average yields may be 15 to 20 bushels per acre. According to estimates worked out with the assistance of Dr. George A. Pond, professor of farm management, the approximate cost of production per acre of field beans is $24.52 compared with $20.90 for corn.

Estimated Comparative Cost per Acre of Producing Corn and Field Beans

Item	Corn		Beans	
Man labor	11.8 hours @ 40¢,	$4.72	21.6 hours @ 40¢,	$8.64
Horse work	10.5 hours @ 18¢,	1.89	21.7 hours @ 18¢,	3.91
Tractor work	5.9 hours @ 60¢,	3.54	2.8 hours @ 60¢,	1.68
Seed		1.25		4.00
Machinery		2.30		1.09
Manure		1.20		1.20
Land rent		6.00		4.00
TOTAL		$20.90		$24.52

Man, horse, and tractor hours used and machinery costs for field beans were taken from Michigan Special Bulletin 270 (1937). The higher cost of production of field beans is due largely to the greater number of man and horse hours of labor used and to the higher cost of seed. Seed cost per acre for field beans for 1943 was included at $4 compared with $1.25 per acre for corn. Under ordinary conditions the seed cost per acre for beans would range around $2. Land rent has been included at $4 per acre, assuming that beans will be grown on soil of lower productivity than that used for corn. This charge might well be reduced to $2 per acre for the light sandy soils which have not been brought to a fair state of productivity.

Secure Recommended Seed Early

Seed is scarce and high-priced this spring and early purchasers will obtain the best seed beans. Thirty-five to 40 pounds of seed per acre of the white pea beans is the right amount to plant. The two varieties recommended for commercial bean production are Michelite and Robust. They have high yielding ability, and produce beans of desirable market type.

Robust has been tested in the state over a period of years and has outyielded all other varieties. Michelite was developed from a cross with Robust as one of the parents. It has all the desirable characters of its Robust parent and a whiter seed color inherited from its other parent.

Both Michelite and Robust are more resistant to common bean diseases than other pea bean varieties. For home use, Great Northern, Brown Swedish, and others may be grown for variety.

Good seed for planting should be pure white. Yellowish-brown discolorations may indicate the presence of diseases. A virus disease such as mosaic is carried within the seed and cannot be recognized by inspection of the beans. Planting of field-inspected certified seed when obtainable will aid in keeping bean diseases at a minimum. Purchasing genuine seed of the recommended varieties from reliable sources at prices above those asked for beans of unknown origin and performance will prove to be a good investment.

ROTATING BEANS WITH OTHER CROPS

As bean diseases may overwinter in fields, it is best to rotate beans regularly with other crops to reduce disease from this source. Applying manure when corn and potato crops are grown and then planting beans the following year is good practice. Beans also do well following meadow and pasture crops.

Soils for Field Beans

Well-drained sandy, sandy loam, and loam soils well supplied with organic matter and in productive condition are the most satisfactory for bean production. While the bean is a legume and is able to obtain part of its nitrogen from the air, higher yields are obtained where there is a fairly liberal supply of nitrogen in the soil.

Growing alfalfa and applying manure to the light sandy lands of the east central part of the state where most of the commercial beans have been grown would result in considerably higher average yields. Even on light sandy soils, applying lime is not necessary for the bean crop. Seed inoculation is not necessary because the bacteria necessary for successful growth of beans are present in Minnesota soils.

Preparing the Seed Bed

Fall plowing for beans permits the soil to become firm underneath before planting and allows time in spring to germinate the weed seeds in the surface soil and to kill the seedlings. Cultivation should be started early in spring to start germination and repeated often enough to kill the weeds in the seedling stages. It is easier and cheaper to eliminate most of the weeds before rather than after planting the beans. The disk and springtooth harrow are efficient implements in preparing the seedbed for beans. The seedbed should be very firm to within 1½ to 2 inches of the surface. Cultipacking both before and after planting is usually advisable.

Time of Planting

Over a three-year period, plantings of field beans at University Farm on June 5 produced as high yields as plantings made during the last half of May. Planting on June 15 resulted in lower yields. Delay of two to three weeks after the normal corn planting date gives additional time to germinate the weed seeds in the surface soil and kill the seedlings.

Manner of Planting

Beans are usually drilled in rows 28 to 36 inches apart. The narrower spacing is preferable where cultivators can be adjusted. Four plants to the foot for 28- to 30-inch rows and five plants per foot for the wider spacings are recommended. Thirty-five to 40 pounds per acre of seed of Robust or Michelite beans are required. The seeding is done with a corn planter having a bean attachment, or with a grain drill with the necessary cups stopped up to obtain the desired width of row. Whatever implement is used should be carefully regulated before planting time.

High Yielding Good Market Type

Michelite and Robust Varieties Are Best

Most Resistant to Bean Diseases

In a firm, well-prepared seedbed, the beans should be planted from 1 to 1½ inches deep. Deeper planting usually results in uneven stands, uneven ripening, and a larger number of undesirable beans to remove by picking.

Care after Planting

If a crust forms on the seedbed before the seedlings come through, the harrow with teeth slanting backward may be used to break it. If carefully adjusted the harrow will not pull out the bean seedlings. As soon as the plants are well up, cultivate close to the rows, throwing enough soil against the bean seedlings to cover up weeds starting in the row. Then cultivate as often as necessary to keep young weed plants destroyed. Avoid cultivating when the beans are wet with dew as this tends to spread diseases that may be present.

Harvesting and Threshing the Crop

A bean harvester has been used with beans grown on a commercial scale. This harvests two rows at a time, cutting the plants just beneath the ground surface and leaving them in a single windrow. Only the amount that can be stacked promptly should be harvested at one time. Ripe standing beans are less damaged by rain than those lying in windrows. Beans rained on in the windrow should be turned as soon as the ground dries to avoid discoloration of the beans in the pods.

In good drying weather, fully mature beans may be hauled to buildings and stored, or stacked in the field after a half day to a day in the windrow. Generally, beans are stacked in the field. Bean stacks should be not over 4 to 5 feet across, built around a center stake or post on a foundation of straw 10 to 12 inches deep which prevents molding at the bottom. Posts protruding from the tops of stacks direct rain into them and should be avoided. In stacking, the center should be kept very full at all times, with the sides vertical or slanting outward slightly until ready to round the top off. Covering the tops of the stacks with hay to shed water is essential.

Special bean threshing machines made in several sizes are used by commercial growers. Some of the combines might be used provided adjustments can be made to avoid cracking the beans.

Marketing the Crop

As they come from the thresher, beans usually contain from 1 to 4 or 5 pounds per hundredweight of cracked or discolored beans, pieces of dirt, and

small pebbles. This undesirable material is called "pick." It must be removed before the beans can be sold on a commercial basis.

The beans from the thresher are either delivered to or are picked up by a dealer who has picking facilities or who sends them to a larger center for that operation. Usually a small sample is taken from each load to estimate the amount of "pick" which is then deducted from the weight delivered by the farmer. In addition, the cost of "picking" is ordinarily deducted from the farmer's payment. At present, this charge is 10 to 11 cents per pound. At some country points, dealers buy from growers on a flat price basis.

Feeding the By-products

The bean pods and, to a lesser extent, the vines, have a feeding value for sheep and cattle. This by-product is usually valued at from $1 to $1.25 per acre. According to Henry and Morrison's "Feeds and Feeding," cull beans may make up 20 to 25 per cent of the grain mixture for fattening lambs, while ground cull beans may be fed to dairy cows to the extent of about one fifth of the concentrate mixture.

ADDITIONAL INFORMATION

Bulletin 776, "Experiments with Field Beans" and War Emergency Bulletin 8, "Dry Bean Production in New York." (5 cents each.) Cornell Agricultural Experiment Station, Ithaca, New York.

Special Bulletin 270, "The Economics of Bean Production in Michigan" and Special Bulletin 276, "Field Stacking for Michigan Beans." Michigan Agricultural Experin ent Station, East Lansing, Michigan.

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