

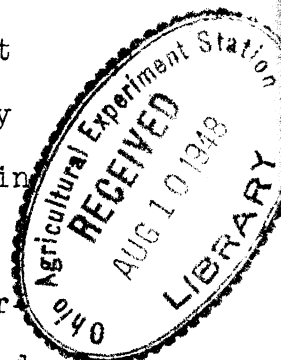
GROWING LIMA BEANS IN OHIO

Department of Horticulture
Ohio Agricultural Experiment Station

Mimeograph No. 1
February 1, 1932

Green Lima Beans are becoming more popular as a market garden crop in Ohio. This is probably due to the fact that they have been grown in a few special localities and shipped considerable distances to the larger markets only. Transportation of the freshly shelled beans is quite precarious; therefore, they are never re-shipped from the larger to smaller markets as the shipping hazards are increased. Often, the beans reach the larger markets in a discolored or even moldy condition, and in such condition they are of little value. Thus, there are distinct advantages in growing lima beans as a market garden crop close to local markets not now adequately supplied. In certain specialized localities lima beans will still be grown to ship to distant markets. In regions where canning factories exist, this crop may be grown quite profitably also.

The market using green-shelled lima beans demands the large-seeded types. The pole or running varieties are grown chiefly in the trucking regions. The regions are located for the most part where native timber is abundant, and saplings can readily be secured for poles. In the vicinity of many local markets in Ohio there is no timber land from which poles may be cut, and available substitutes for bean poles are very expensive if purchased at a lumber yard. Because of this attention is directed towards the bush forms of lima beans, which require no poles



This page intentionally blank

or other supports. Of these the Sieva or small-seeded type is easily grown and is an abundant cropper. The market, however, is prejudiced against small-seeded limas, and the shelling of them is a tedious task. The bush forms of the large-seeded limas would be admirably adapted to growing under market garden conditions in Ohio except for one drawback--attempts to grow them have usually resulted in disappointment because they have produced such meager yields. It is a common occurrence for the plants to make a robust growth and blossom freely but fail to set or develop many pods. It is hoped that these few suggestions on cultural practices will help to make the large-seeded lima a more reliable cropper for Ohio growers.

The small-seeded type known as the Sieva is used for the production of dry, rather than green, limas, although it is popular for canning. It is somewhat hardier than the large-seeded type, is earlier, and more certain of producing a crop. The Sieva may be either dwarf or climbing. It is planted but little as a green bean, except in the northern part of the country where a rather short growing season prevails. Cultural practices for the small bean, where they differ from those for the large-seeded type, will be given separately.

The large-seeded type or true lima is of superior quality in the green state and should be grown to market in this condition. A frost-free growing period of at least 4 months, with warm nights during this time, is necessary if large yields are desired. Hot, dry weather seems to reduce the set of pods. A light soil will stimulate early growth and maturity. The first pods should be ready to pick in 85 to 90 days.

This page intentionally blank

Soil

Select a fertile loam which is well supplied with humus, well drained, but retentive of moisture. If possible, a good clover sod should be plowed down for this crop. Plow deeply in the fall and start the preparation of the seedbed as soon as the soil may be worked in the spring. The seedbed should be fit especially well and must be mellow because of the large size of the cotyledons which must be pushed to the surface.

Go over the field with a harrow or disc at least once per week until time for planting. Use a roller or cultipacker if necessary to pulverize and properly fit a loose or cloddy soil. Thorough use of the harrow at intervals of a week before planting time serves to prepare a fine, well settled, moist seedbed which induces uniform germination; it destroys millions of weed seedlings and thus reduces the labor in keeping the crop clean, and it thoroughly mixes and incorporates the applied fertilizer with the soil.

Manures, Fertilizers, and Lime

Readily available fertilizer will hasten growth, but excessive applications of nitrogen are thought to increase the foliage development and delay fruiting. Apply stable manure, if available at not too great a cost, at a rate of 10 to 20 tons per acre before plowing in the fall. Supplement this with 300 to 500 pounds of a commercial fertilizer, high in phosphorus, applied broadcast and mixed thoroughly with the soil a short time previous to planting. If manure is not available or is too costly, use from 700 to 1000 pounds per acre of a high grade complete fertilizer, such as a 4-12-4 or 4-16-4 formula, the amount and

This page intentionally blank

formula used depending upon the fertility and physical condition of the soil. In connection with irrigation or rainy seasons, side-dressings of nitrogen have proved highly profitable. Superphosphate or bone meal is undoubtedly the most important single element and usually can be supplied in relatively large quantities on most soils since it favors fruit and seed development rather than vegetative parts.

Planting

Lima bean seeds will not germinate well until the soil temperature is above 60° F. The planting range of season may be between May 25 and July 10. Since the large limas demand relatively high soil temperatures, and the seeds are likely to rot in the ground if planted when the soil is too cold and wet or before danger of such conditions is safely past, the later planting dates are advised for large-seeded types of limas. At the same time these limas need a relatively long season in which to produce a large crop; thus, some time between June 1 to 10 is a good time to plant in Ohio.

The seeds are planted at a depth of 1 to 2 inches. Do not plant too deeply. If covered too deeply, many seedlings fail to reach the surface. Deep planting is responsible for many crop failures. Two inches is the maximum depth for safety in light soils, and 1 inch is to be preferred. If the seeds are only lightly covered there is a more rapid and uniform germination and usually a much better stand, provided the seedbed has been properly fitted. It may be necessary, provided a heavy rain after seeding causes a crust to form on the surface, to run over the field with a weeder to break the crust and allow the cotyledons to emerge.

This page intentionally blank

If soil conditions are right, it is not particularly necessary to drop the seed with the eye down. The small-seeded limas may be drilled in but the large ones need special planting. The rows are 24 to 36 inches apart, and the distance in the row depends upon the variety. The dwarf types may be put 6 to 12 inches apart. It is permissible to plant in hills, 2 feet apart in the row, placing 4 seeds per hill, the stand usually not averaging over 3 plants per hill. The former method is preferred where weeds can be controlled easily.

Inoculation

Inoculation of lima bean seed may reasonably be expected to increase yields. The effectiveness depends upon several environmental conditions the most important of which are the bacteria already in the soil and the moisture. Since the cost of inoculation is so low and tests have shown increased yields from inoculation in a majority of cases, this treatment for lima bean seed is recommended unless the grower is reasonably sure his soil contains the necessary bacteria. The cowpea and lima bean cross inoculate readily, and this should be kept in mind when rotating crops.

Variety

The Fordhook, Burpee, and Dreer bush lima varieties are all excellent selections. Tests have shown that the variety employed is often more important than any other single factor affecting yields. The Fordhook and Dreer limas are of the potato type, and the Burpee is the flat type, but all sell equally well on the market.

This page intentionally blank

Cultivation and Irrigation

Tests have conclusively proven that irrigation is a most valuable means of increasing lima bean yields. The increases produced by irrigation vary with the seasons but have averaged higher for lima beans than most other crops, (44 per cent).

The first cultivation should be made as soon as the seedlings are sufficiently developed to permit following the rows easily. Cultivation may be fairly deep at first and close to the rows. Succeeding cultivations should follow at weekly or 10-day intervals until the crop is "laid by". These should be shallow to avoid damage to feeding roots near the surface of the soil.

Harvesting

Most markets now demand that lima beans be shelled before they are offered for sale. In local markets where the producer comes directly in contact with the consumer it might be possible to educate the public to purchase lima beans in the pod and thus secure the advantage of less perishability, better sanitary conditions, and a lower priced product. Bush limas are picked for green-shelled use when the pods are about full grown but have not begun to yellow. Several pickings are needed to gather the crop.

Insects and Diseases

The Downy Mildew appears as a white mold on the pods. Plenty of moisture, with hot days and cool nights, favor the mildew. Rotation, sanitation, clean seed, and wide spacing so that the vines dry quickly will help but may need to be supplemented with applications of 4-4-50 bordeaux mixture.

This page intentionally blank

Pod blight appears first on the leaves and then on the older pods. Warm, humid weather increases the losses from pod blight. The lesions on the pods spread and a black wilted pod results. Clean seed is the first step in control. Soaking for 10 minutes in 1 to 1000 bichloride of mercury solution, followed by rinsing and drying, will kill seed-borne spores and mycelium. Spraying with 4-4-50 bordeaux mixture will check the spread of infection in the patch.

Lima Beans for the Canning Factory

With the following exception, lima beans for the canning factory are grown in a similar manner to the large-seeded market types. Naturally, there is less justification for the expenditure for fertilizers, irrigation, and other cultural practices to the extent followed on the higher-money-value market garden crop.

Lima beans, raised for the canning factory or dry bean market, are a valuable crop for the grower in sections of Ohio to which they are adapted. They furnish a quick cash crop. The price is guaranteed in advance and is not subject to fluctuations when sold by contract to the canner. A "bumper" crop cannot depress the price paid for the product, and thereby one crop risk is eliminated. It develops a much greater and deeper root system than does the field bean and most of these roots left in the soil at harvest time. It is harvested in an immature state, and if the crop residues are returned to the soil there is little loss in soil fertility. There is less hazard in harvesting than there is with field beans because the crop is harvested early and is seldom damaged by rain or frost. The crop is removed in ample time to plant a fall crop of grain, which makes possible the

This page intentionally blank

rapid preparation of an ideal seedbed by means of the disc and harrow. Silage made from the green vines and pods is a valuable food for livestock. The labor in growing this crop up to harvest time is no greater than that of growing a crop of field beans, and, although there is somewhat more bulk to handle at harvest, it is quite likely that the extra labor is more than compensated for by the decrease in crop hazards.

Planting

Follow the directions as to date of planting, etc. as given above. Use a grain or bean drill to plant 45 pounds of seed per acre in continuous rows 28 inches apart or plant 4 to 6 seeds per hill with a check rower or hand planter in hills 24 inches apart each way. The latter method is especially recommended for the lighter soils or where the fields are weedy or grassy. Certain of the leading canners advise the use of the check-row method for all plantings of lima beans.

Variety and Seed

The Henderson Bush Lima is the best variety for use in Ohio. This is productive, small seeded, and makes a high quality canned product. Plant clean, plump seed of high germination. Seed is usually supplied by the canner, and it is to the mutual interest of both the grower and canner that good seed from high yielding strains be planted.

Harvesting

Harvest the crop with a bean harvester when it has reached the proper stage of maturity and draw out once to the viner station.

It is common for a crop of lima beans to average at least 1500 pounds per acre. Under favorable growing conditions and with the best of care, it is possible to obtain a yield as high as 4000 pounds or more per acre.

Donald Comin.

This page intentionally blank