Growing Baby Lima Beans

By

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Lima beans have been emphasized as an important war crop, and increases in production are requested. This crop is used shelled in both the dry and green state and is canned and quick frozen. There are two main botanical types, those having small seeds (Phaseolus lunatus) and the large-seeded type (P. lunatus var. macrocarpus) or the true lima. The small-seeded groups are early maturing, and the plants are small and more resistant to low temperatures than the large limas. The pods are small, numerous, papery, and split open readily upon reaching full maturity. The seeds are small and flat and vary in color from white to red and speckled. The commercial small lima, however, is white.

The large limas are not generally satisfactory for Colorado conditions. They are late in maturing and the plants grow tall and are very susceptible to injury by cold temperatures. The pods are more fleshy and less inclined to shatter seed at maturity. The large limas are not generally grown in Colorado because soil and climatic conditions in most districts are not favorable for them.

The seeds of the bush lima as grown in Colorado are white; they are more or less green in the intermediate state. This is a desirable characteristic in imparting the green color to the canned product. However, if baby limas are grown for seed, greenish color indicates immaturity except in the strains that have been developed to hold green color in the mature dry state.

History.—Lima beans are of American origin and have been grown by the Indians in Arizona for many centuries. Plants grow wild in the Amazon basin region of Brazil, and seeds have been found in prehistoric mummy pits in Peru. Seeds were introduced from Lima, Peru, by a naval officer about 1824, and culture became more general in the United States after that date. The bush, dwarf, or baby limas have probably been selected from mutations. A variety known as the Hopi lima, now grown in Colorado, was originally obtained from the Hopi Indians of Arizona.

Climatic Requirements.—Dwarf or baby limas are grown in northern Colorado for canning and in the Arkansas Valley as a seed crop. The crop requires a warm-growing season and is less hardy than are common beans. If temperatures are too high and humidity very low during the blooming period, the blossoms will drop off without setting pods. Shattering of seed from the pods is favored by extreme dryness at harvest time and is especially bad on strains which do not uniformly mature their pods. The different varieties of dwarf limas require from 70 to 90 days to mature, depending on temperature and moisture conditions during the growing season.

Culture.—The culture of the dwarf lima beans is somewhat similar to that for common beans. Plantings should be made later in the spring than for common beans because lima beans require a higher temperature for germination of the seed. The seed rots readily in cold soils, and it is important not to plant it too deep. Irrigation after planting tends to pack the soil and such a condition delays seeding emergence. The crop is better adapted to lighter sandy soils than to heavy clay types. It is more difficult to obtain good stands on heavy soils, and when earliness is a factor the light soils are better. Any soil which forms crusts
readily delays seedling emergence and reduces stands.

Depth of seeding varies with soil types and soil moisture conditions. Planting should be no deeper than is necessary to place the seed in moist soil. This varies from 1 to 2 inches.

Most of the acreage is grown in rows 20 to 24 inches apart. All commercial production in the State is grown under irrigation. The ordinary bucket sugar-beet drill can be used for planting if special seed plates are fitted into the drill. The amount of seed required per acre will vary between 35 to 50 pounds, depending on spacing and size of seed used. The heavier rates of seeding are preferred to assure a good stand. Seed drills should be checked and tested for uniform distribution in the row to eliminate bunching of seed.

Seed.—The best seed obtainable should be bought from reliable seedsmen. Such seed should be (1) free from disease; (2) true to name (not mixed strains or varieties); (3) good germination (check for cracked seed); (4) a good type of product for the variety or strain. One of the most important steps in growing this crop is the buying of good seed. The crop is sensitive to unfavorable conditions during the germination period, and good seed is essential for good stands.

Cultivation.—Deep cultivation should be avoided and cultivation should be only as often as is necessary to control weeds. Shallow cultivation is better, and even that should be stopped, if weeds are not a factor, when the midpoint of the growing season is reached. From 4 to 6 cultivations are all that are usually necessary.

Cultivation should not be done when the vines are wet, for this may spread disease from diseased to healthy plants. Ordinary sugar-beet cultivators can be used.

Harvesting.—Dwarf lima beans are grown to be used in the green-shell condition for canning or quick freezing and as a dry bean.

In harvesting for green shelling, the pods are picked when the seed has become almost fully developed but before the pods turn yellow, or over mature. It is important to pick them at the right stage of maturity to obtain more green color in the shelled bean.

Baby lima beans grown for canning or quick freezing are cut with special mowing machines. The vines are then hauled to a vining station or the factory where they are shelled by machinery.

Dry lima beans are harvested about the same way as dry field beans.

Baby lima beans are harvested as soon as a good percentage of pods are matured. The pods do not ripen uniformly on the plant, and the first set of pods are usually fully ripe while the last set are green. It is important to watch the field closely for signs of maturity. Harvesting should start before lower or first-set pods are dry enough to shatter. The beans are harvested with a two-row bean cutter. These machines are equipped with two cutting bars or knives which cut off the plants below the surface of the soil. The machines have a guard rod bolted on above the cutting bars, which throw the two rows into a single pile row. (Field cutting should be done early in the morning when the vines are fairly damp to reduce the loss from shattering.) The beans in the pile row are
then piled in small cocks and allowed to cure until somewhat dry. The piles should be small enough so that they can be handled in one fork full in loading to prevent shattering. The beans may then be stacked in small stacks in the field until ready to thresh.

Threshing should be done as soon as possible after the vines are dry. This is usually accomplished by the ordinary grain thresher although it is not as satisfactory as the regular bean huller. The grain thresher cylinder usually rotates at a speed of about 1,100 revolutions per minute, and even when this speed is reduced to 500 or 400 revolutions it is not always satisfactory. The grain thresher may be further changed by removing all but one row of concave teeth and one half of the cylinder teeth, or more if necessary to prevent heavy cracking losses. The regular bean huller may have one or two slow-speed cylinders instead of the one cylinder. Favorable results have been obtained by running the cylinder teeth set at 5/8 inch from the teeth of the concave, as compared to 3/8 inch spacing as used in the ordinary grain thresher. This set will often avoid excessive breaking and splitting of the beans.

Lima beans injured in threshing may cause the cotyledons to be broken from the embryo, and the hypocotyl may be broken, which may cause the cotyledons to remain below ground when germination takes place. Injury to the radicle may cause a complete loss of the seed. A condition known as "baldhead" plants which produce few or no pods is associated with injury to seed. In this case the growing point or all the primary leaves are absent in the seedling plant.

After threshing, the beans are recleaned and the splits removed by standard cleaning machines. Hand picking may be done where the beans are discolored or soft. The beans are marketed in bags.

Varieties

Most of the commercial acreage grown in Colorado is planted to the Dwarf lima bean varieties and strains. The Hopi lima is grown commercially, but the Aztec lima is grown only for local markets and home gardens.

Henderson Bush Lima.- This variety is widely planted and many strains have been selected from the original variety. The earliness of this variety and its distinct size and color, its productiveness, and its general freedom from disease make it a dependable type to grow. It is subject to blossom-drop, however, under conditions of high temperature and dry air or low humidity. It is widely used by commercial canners and for quick freezing. The plants are small, dark green, erect, and bushy. The pods are flat and there are three or four beans per pod, which are small and oval shaped. Dry beans are creamy white. It requires from 65 to 84 days for this variety to come into harvest, depending on temperature and other growing conditions. Improved strains mature their pods more uniformly, and harvesting is concentrated into a shorter period.

Green-Seeded Bush Lima.- This is a new variety similar to Henderson Bush lima, except that the seeds do not turn white at maturity but remain pale green. It is about the same in plant, pod, and maturity characteristics as the Henderson Bush lima. It is being well received by canners and is useful for quick freezing.

Baby Potato.- This variety was selected by the Illinois Experiment Station out of a cross between Henderson's Bush lima and one of the potato lima types. The plant characters and general appearance are similar to Henderson's
Bush lima but it matures more uniformly and is a little later. The seeds are small and thick and are of a good green color when fresh. It is well adapted for canning and quick freezing.

**Early Baby Potato.** This variety is a week earlier than Baby Potato lima and is better for Colorado conditions for that reason. It matures about the same time as the Henderson Bush lima.

**Baby Fordhook.** This variety is a little later than the Henderson Bush lima and is similar in plant and pod characters, although the plant is more branching and the pods are thicker. The pods have from three to four seeds, which are plump and small. Seeds are dark green early but lighten in color as they approach maturity.

**Hopi Lima.** This variety is one of the Hopi Indian lima beans from Arizona that is especially valuable because of its ability to set pods in a hot, dry climate. The plant is of the vining or runner type, but it does not require staking. The pods are slightly curved and the seeds run from three to four in a pod. The seed is thicker and slightly larger than Henderson's Bush lima, and the color is a creamy white. It requires from 75 to 85 days for this variety to come into bearing, depending on climatic conditions. It is considered more drought resistant than other lima beans.

**Runner Beans.** (Barteldes Bush Lima or Aztec) This variety is known under many different names such as Grand Valley, White Egg, Cream Butter, California Butter, and others. It was supposed to have come from an ancient Aztec ruin but is more likely to be from an old Mexican or Indian bean. It is mentioned here only because of the numerous inquiries received concerning its origin and use. It is not a true lima, but belongs to the flowering bean group (*Phaseolus coccineus*). The plant is distinctly running and spreading in habit and forms a dense mass of runners on the ground. It is often a perennial in the Southwest.

The pods vary in size, are usually long, curved, and rough-surfaced. The pods are about 6 inches in length, and the seeds are widely separated in the pod. The seeds are very large, thick, and plump. The color is a glossy white with practically no veining. It produces green pods a few days after Henderson's Bush lima. The immature pods are not considered of good quality as a snap bean. It is more generally used as a cooked dry bean and is of some use as a green shelled bean, except it is difficult to shell in the green state. There are better varieties now for the home garden, and it is not planted to any extent except in local districts in Colorado.