Beans

Phaseolus limensis (lima beans)
Phaseolus vulgaris (snap beans and dry beans)
Vicia faba (fava bean)

Recommended Varieties	Disease Resistance
bush yellow	
Goldencrop Wax	AAS, CBM, V
Resistant Cherokee Wax	CBM, V
lima	
Fordhook 242 Bush	AAS
Henderson's Bush (pole type)	
King of the Garden (bush butterbean type)	
Dixie Butterpea (butterbean type)	
Baby Fordhook Bush (butterbean type)	
snap-bush green	
Contender	CBM, PM
Harvester	CBM, V
Roman	CBM
Tendercrop	CBM, PM, V
snap-pole green	
Kentucky Wonder	R
Romano (Italian type)	
Scarlet Runner (attractive scarlet flowers)	

Beans are tender annual, warm-season legumes that will fix their own nitrogen once a good root system is established. Snap) beans (also known as green or string beans) that are grown for their pods are the most common. Some beans, such as limas, soybeans, and dried beans, are grown primarily for the seed itself and not pods. Bush snap beans are the most popular because of early maturity and because trellising is not required. Varieties include standard round and flat podded green, yellow wax, and purple-pod types, giving gardeners a larger choice than is generally available in supermarkets. Though wax beans are yellow and waxy in appearance, their flavor is only subtly different from that of regular green snap beans. Purple pod beans are different in appearance while growing, but the pods turn green when cooked. Flat-pod green snap beans are somewhat different in flavor and texture than the round-pod ones and are preferred by many gardeners. Many varieties are available in both bush and pole types.

First plantings of bush beans should be made after danger of frost is past in the spring and soil is warmed, since seeds planted in cold soils germinate slowly and are susceptible to rotting. Also, seedling growth may be slow in cool temperatures. Plant two crops of bush beans 2 to 3 weeks

apart for a longer harvest period. Snap beans should be kept picked to keep plants producing heavily. Harvest snap beans when the pods are full-sized. The pods will break easily with a snap when they are ready. Seeds should not cause the pods to bulge.

Half-runner beans have a growth habit between that of bush and pole beans, producing beans usually used as snap beans. Though they have runners about 3 feet long, halfrunners are generally grown like bush beans. Trellising, however, may increase production of these already heavy yielders.

Pole type beans come in many varieties, generally bearing over a longer period than bush types and yielding more in the same amount of space because they require trellising. Pole beans are natural climbers but will not interweave themselves through horizontal wires. A tripod support can be made with 3 wooden poles or large branches that are lashed together at the top. Five to 6 seeds are planted in a circle 6 to 8 inches from each pole. Many types of homemade trellises work well as long as they provide the needed support. Trellises should be 6 to 8 feet tall and sturdy enough to withstand strong winds and rain. See illustrations under vertical gardening in this chapter for examples of bean trellises. Scarlet runner beans are a type of pole bean that is quite ornamental, as well as productive and delicious. The vines grow rapidly, producing beautiful red flowers and beans, which may be harvested as snap beans when young and as green shell beans later. Beans are ready to pick in 75 to 85 days and several pounds are produced per plant. The value of scarlet runner beans is mainly ornamental, although the lush 6 to 15-foot vines can be used to cover arbors, trellises or fences. An added feature is that the flowers are attractive to hummingbirds. According to some catalogs, the scarlet runner bean grows best in cooler weather than standard beans prefer; in some very hot areas the vines may not keep producing all summer, as they will in cooler regions. Keeping maturing beans picked off will prolong the life of the vines.

Lima beans are available in bush or pole types. Bush limas mature more slowly (65 to 75 days) than snap beans (50 to 60 days) but about 10 to 15 days earlier than pole limas. Pole type limas have better yields and produce longer than bush forms. Soil temperature must be 650 F for 5 days in order for lima beans to germinate well. Because the large seeds store considerable amounts of carbohydrates, limas are quite susceptible to soil fungi and bacteria, which find these foods as nutritious as we do; thus, the sooner the seedling starts using the stored food, the better. Seed treated with antifungal agents will help improve germination rates. Soil should be kept moist (but not soaking wet) until the seedlings come through the ground; do not allow a crust to form on the soil, since the seedlings will have trouble pushing through. Prevent crusting and conserve moisture by spreading a light mulch over the seeded row. A cold, wet spell can cause lima flowers to drop, as can excessively hot and dry periods, reducing yields. Baby limas or butter beans are less susceptible to blossom drop problems. Harvest lima beans when pods are bright green and the seeds are full-sized. The ends of the pod will be spongy.

Southern peas are not actually beans or peas, but are in a separate genus; however, they are used in the same ways. Three commonly grown types are black-eyed pea, cream pea, and crowder pea. Southern peas may be harvested in the green shell or in the dried pea stage. The yard-long or asparagus bean is related to black-eyed peas and has similar flavor, but the entire pod may be

eaten. On trellised vines, pods may be produced which are 1-1/2 to 2 feet long. Yard-long is stretching it a bit. Asparagus beans need warm temperatures and a long growing season to do well. Look for the seeds in novelty, gourmet, Oriental or children's sections of seed catalogs.

Soybeans are increasing in popularity in home gardens because of their high nutritional value (protein content) and versatility. Catalogs often list them as edible soybeans; all soybeans are actually edible, but those in garden- catalogs have been bred to do well under ordinary garden conditions, requiring a shorter season and not growing as tall as the field types. There is also a difference in flavor and texture, as there is between sweet and field corn. Soybeans are less sensitive to frost and may have fewer insect problems than standard beans. Soybeans are quite delicious when harvested as green shell beans, but may also be allowed to dry on the vine. The pods of soybeans are quite difficult to open; cook for a few minutes to soften the pod before removing the beans.

Beans used primarily as dried beans are many and varied. Many can be used green, but dry well for easy storage. In the small garden, growing dry beans is somewhat impractical, since the amount of space required to raise a large enough quantity for storage is great. Many types of dry beans may be purchased in supermarkets at a very low cost, so it may be more worthwhile to grow higher-value crops in the limited space. However, if you have a very large garden area and a desire to sit on the front porch rocking away and shelling beans in the fall, they are worth a try. Some varieties available to gardeners are either rare or completely unavailable in the supermarket.

The horticultural (October bean), is very widely grown in parts of the state. The colorful pods and beans of the horticultural bean make it an attractive addition to the garden and kitchen. The seeds of pinto beans look similar to those of the horticultural beans, but are smaller. They are used widely as brown beans and as refried beans in Mexican dishes. Black beans or black turtle beans make an unusual, delicious black-colored soup. They are easy to grow if given plenty of air movement to prevent the disease problems to which they are susceptible. Kidney beans are the popular chili and baking bean, available in deep red or white types. Navy pea and Great Northern beans are used in soups and as baked beans.

Mung beans, native to India, have enjoyed a rise in popularity because of their use as sprouts in Oriental dishes and salads, and gardeners now find seeds available for home production. Mung beans require 90 days of warm weather for good yield in the garden. Garbanzos, or chickpeas, produce plants which do not look like other bean plants. Garbanzos are actually neither true beans nor peas, but are leguminous. The fine textured foliage is an attractive addition to the garden. Plant many seeds; the meaty seeds, like limas, tend to rot if they don't germinate and grow rapidly. Also, each pod contains only I or 2 seeds. The nutty-flavored beans of unusual texture are good roasted, in salads, and in soups. Garbanzos also require a warm climate and long (100-day) growing season.

Fava beans, or broad beans, are quite hardy. In cool climates they are often substituted for limas. Favas are sown early in spring or late summer, as they do not grow well in warm weather. It should be noted that some people of Mediterranean origin have a genetic trait (enzyme deficiency) that

causes a severe allergic reaction to fava beans. People of this descent should sample the beans in small quantities at first.

Nutritional Value of Snap Beans (Green Beans) (includes Italian, green, and yellow varieties)

Serving size:	1/2 cup, boiled	Primary Nutrients		%RDA(m)	%RDA(f)
Calories	22	Folic acid	21 mcg	10.5	11.7
Fat	0.2 g	Vitamin C	6 mg	10	10
Calories from fat	8%	Iron	0.8 mg	8	5.3
Cholesterol	0				
Sodium	2 mg				
Protein	1.2 g				
Carbohydrate	4.9 g				% Min. Requirement
Dietary fiber	1.1 g	Potassium	185 mg		5

Nutritional Value of Lima Beans

Serving size:	1/2 cup, boiled	Primary Nutrients		%RDA(m)	%RDA(f)
Calories	109	Folic acid	78 mcg	39	43
Fat	0.35	Iron	2.25 mg	22.5	15
Calories from fat	3	Magnesium	41 mg	12	15
Cholesterol	0	Thiamine	0.15 mg	10	14
Sodium	2 mg	Zinc	0.9 mg	6	7.5
Protein	7.3 g				
Carbohydrate	19.7 g				% Min. Requirement
Dietary fiber	6.8 g	Potassium	478 mg		24

Nutritional Value of Pinto Beans

Serving size:	1/2 cup, boiled	Primary Nutrients		%RDA(m)	%RDA(f)
Calories	117	Folic acid	147mcg	74	82
Fat	0.4 g	Iron	2.24 mg	22.4	1015
Calories from fat	3%	Magnesium	48 mg	14	5.317
Cholesterol	0	Thiamine	0.16 mg	11	15
Sodium	2 mg	Vitamin B6	0.14 mg	7	9
Protein	7.0 g	Zinc	0.93 mg	6	8
Carbohydrate	21.8 g	Calcium	41 mg	5	5
					% Min. Requirement
Dietary fiber	3.4 g	Potassium	400		20

Problem Diagnosis for Beans

What the Problem Looks Like	Probable Cause	Comments
Rotted seeds or seedlings collapse soon after they come up.	Damping-off fungi which rot seeds or seedlings or seedcorn maggot.	Do not plant in cold, moist soils.
Yellow leaves, weak, wilted dying plants. Sunken, red oval spots at base of stem	Rhizoctonia root or stem rot	Favored by warm soil temperatures. Remove old plant debris. Rotate. Use registered fungicide.
Wilted, stunted plants. Yellow leaves.	Wet soil	Provide good drainage. Do not overwater.
	Dry soil	Irrigate. Mulch in summer.
	Poor fertility	Incorporate compost / manure before planting.
Plants wilt, turn yellow. Roots, below ground stems have red spots that turn brown and decay.	Fusarium root rot	
Fine whiteish / yellowish stippling on upper leaf surface. Fine, grayish webbing on undersurface of leaves. Leaves look burned when heavily Infested.	Spider mites	Irrigate adequately. Wash mites off leaves. Use predatory mites or soap-based insecticide.
Curled, deformed leaves. Black, sooty mold. Leaves shiny from honeydew. Plants may be stunted.	Aphids	Use soap spray. Control ants with sticky barrier or insecticide.
White stippling on upper surface of leaves with tip, margin burn. Undersurface of leaves shows small, white cast skins of insects.	Leafhoppers	
Yellow leaves with black, sooty mold. Leaves shiny from honey-dew. Clouds of tiny, white insects fly when plant is disturbed.	White flies	A nuisance problem that does not reduce yields.
Stunted seedling plants with distorted leaves. Yellowed leaves.	Thrips. Adults are tan to black and look like slivers of wood.	Feed on plant growing points Larger plants less affected than seedlings. Plants will Young are yellow.outgrow and recover.

What the Problem Looks Like	Probable Cause	Comments
Holes, skeletonized areas on leaves, flowers. Pollen eaten. Chewed leaves.	Cucumber beetles Greenish, yellowish beetles 1/4 inch long with black spots, black head	
Buds and flowers drop off. Maturing beans pitted, blemished.	Lygus bugs	A few can be tolerated.
Blossoms drop off	Hot weather (>90^{o}F) Low soil moisture Smog (during blossoming period)	Plant early to avoid hot weather during flowering and fruiting period. Do not let soil dry out too much between irrigations.
Poor yield. Stunted plants. Roots appear to have knots or beads on them.	Nematodes	Most common in sandy soils Rotate. Soil solarization.
Fluffy, white mycelium grows on leaves, stems, or pods. General rotting. Wilted, water-soaked leaves	White mold Caused by the fungus *Sclerotinia sclerotiorum*	increase spacing between plants to improve air circulation. Rotate. Remove old plant debris and broadleaf weeds.
Brown spots without yellow halos on leaves and pods. Withered leaves.	Fungal disease (Any of several)	Submit sample for laboratory diagnosis
Small brown spots surrounded by yellow halos on leaves and pods Withered leaves.	Bacterial blight	Avoid overhead watering. Use registered copper bactericide.
Mottled, distorted leaves. Stunted plants. Poor yields. Leaves may be thickened, brittle, easily broken from plant.	Mosaic virus	Spread from plant to plant by aphids and leafhoppers. Remove diseased plants. Remove broadleaf weeds - they serve as virus reservoir.
Tiny, white grubs inside seeds within pod; circular exit holes may be visible in seed where adult weevils emerged	Bean weevil Field and storage pest	Remove and destroy bean plants immediately after harvest.
Holes in pods; seeds hollowed and eaten	Lycaenid pod borers (grub-like caterpillars that become tiny butterflies as adults)	

What the Problem Looks Like	Probable Cause	Comments
Thin, white powdery growth on leaves, pods, debris	Powdery mildew (fungal disease)	Use resistant varieties. Spray leaves with strong spray of water. Prune off infected tissue. Rotate. Remove old plants. Use registered fungicide.
Failure to set pods	Excessive fertilizer High temperatures, causing blossoms to drop Mature pods left on vines, causing seed production rather than pod set	Do not over fertilize. Plant earlier in season before ft gets too hot. Pick pods regularly.