

Beans

Introduction

The beans belong to the family Leguminosae. They are considered as nutritious vegetables as they contain high amount of vegetable proteins. Besides carbohydrates and vitamins. The green tender pods are used as vegetable and also the dry seeds. The beans for drying are grown till the seeds are large enough and pod begins to dry. The pods are shelled and seeds are separated. The shelled dry bean has good market.

The various beans cultivated in India particularly in home gardens and some commercially are as follows:

1. French beans (*Phaseolus vulgaris*)
2. Cow pea (*Vigna sinensis*)
3. Cluster bean (*Cyamopsis tetragonoloba*)
4. Broad bean (*Vicia faba*)
5. Lima bean (*Phaseolus lunatus*)
6. Soya bean (*Glucine max*)
7. Garden beans (*Dolichos lab lab*).

There are also many other beans, which are grown in south and northeastern India and in the hilly regions.

French beans (*Phaseolus vulgaris*)

The French beans which are also called as snap bean has dwarf type and pole type. Generally it needs cool climate and therefore cultivated during Rabi season, cut as the bean is day-neutral plant. It can be cultivated in August – September and also from December - February in northern India. The pole type is a climbing plant and needs some support to climb, either bamboo or wooden sticks. The dwarf type is bushy and needs no support. The beans are planted in rows by hand or by a seed drill. In Rabi sowing if the temperature is low or cold germination may not be satisfactory. Bean should be harvested during tender stage or otherwise they develop strings. For dry beans it should be allowed to mature fully. The beans can be grown in a wide range of soil types but sandy loam is best.

Cow pea (*Vigna sinensis*)

The cowpea is a warm season bean and grown during rainy season but the temperature should not be below 20°C. It is trailing plant and needs staking. The early varieties require 70 to 90 days to mature while the late varieties need 120 to 150 days. Well-drained loamy soil is best but can be grown in any type of soil. There are many cowpea varieties, some are bushy and dwarf and some creeping. The seeds also differ in colour, size, shape and pods. Many excellent improved high yielding varieties have been evolved by I.A.R.I. New Delhi. Similarly, improved varieties have been evolved in Coimbatore, Punjab, Madhya Pradesh, Maharashtra etc. The early varieties can be harvested within 60 days while the late varieties in 90 to 100 days. To use as vegetable it should be harvested early otherwise soon they

become leathery and stringy. Usually the pods are best for edible in tender stage. The dried seeds are used as pulse. The varieties, manure and fertilizer requirements, spacing etc. are mentioned in specific chapters.

Dolichos beans

The Dolichos beans are grown throughout India. There are many local types particularly in eastern India and in south. It needs cool climate but can be grown in any kind of soils. The colour of flowers, size, shape and type of pods, size and shape differs from strain to strain. It is a good bean for kitchen garden. The tender pods are used as vegetable. Some plants are bushy and semi-erect while others are climbing. The flowers may be white, pink, purple and light violet and borne as axillary racemes. The pods may be flat or bulged with different shapes and colour. Some are improved by I.A.R.I. and at Coimbatore and Kalyanpur. The seeds are sown in pits during June – July and climbing type needs overhead trellis or bower to trail. Tender pods are used as vegetable.

Cluster bean (*Cyamopsis tetragonoloba*)

The cluster bean is mainly grown in the dry, warm, arid regions of India, which is known as Guar. The plant is hardy annual 1 to 3 meters in height. There are dwarf and tall types. The seeds are black, brown and white. The fleshy green tender pods are used as vegetables. The rough skinned hairy types are used as fodder for the cattle and also as green manuring crop. The crushed seeds are turned into flour known as guar gum, which is used in various industries like paper, textile and food and also it, has export market. In south and eastern India, it can be grown round the year but in arid zones of Rajasthan, Gujarat and Punjab it is grown commercially as it can thrive in hot winds, warm temperature and drought conditions. It can be grown in alkaline sandy loam soil. There are many good high yielding varieties and strains evolved by IARI and other Research Institutes.

Lima beans (*Phaseolus lunatus*)

Lima beans are not commonly grown in India but it has importance in foreign countries. The beans are flat seeded and large and mainly it has two types, Pole type and Bush type. Lima needs mild cool climate and prefer heavy clay soils. The plants are deep rooted and the climbing type needs support for growth. So staking is necessary. There are many varieties and strains; some are introduced from U.S.A.

Broad beans (*Vicia faba*)

The Broad beans are also not very much popular but are grown in some states and hilly regions. The pods are in cluster and it has not branches. The seeds may be yellow, black or white. However it can be grown in plains during September and October.

Sword beans

The sword beans has deep roots, the leaves are pinnate, trifoliate, dark green and long. They are grown in home gardens. Some are shrubs and some are climbing type. The pods are thick, long, and leathery and look like a sword. The seeds are white or reddish. Tender seeds are used as food and mature ones are cattle feed. The white seeded bushy type is suitable for home gardens.

Goa bean or ridge bean

In case of the Goa bean or winged bean or ridge bean the pods are used as vegetable and each pod has four feathery wings on four sides. It is a creeping type and is mostly grown in home garden particularly in south India and northeast India. The seeds are small with brownish in colour. The dry seeds have a tough seed coat. The pods are green and about 12 to 18 cms long. It is grown in pits and needs organic manure and fertilizers like other beans. To trail the branches it need a Bower or trellis. It grows vigorously and flowering starts within three months. It is an excellent nutritious and delicious vegetable.

Soya bean (Glucine max)

Soya bean is very popular in Japan and China. It is a versatile bean with high protein content. Its cultivation is now done in India on a wide scale because of its industrial uses. It is grown in sub-tropical regions and in hilly slopes. However, it can be grown in plains during Rabi season. Seeds for planting should be inoculated. It is grown as Kharif crops in some parts. In hills it is sown during April – May. It requires 4-5 months to mature pods.