BROAD BEAN

BOTANICAL NAME : *Vicia faba* L.

CHROMOSOME NUMBER : 2n=12, 14

FAMILY : Leguminosae

CENTRE OF ORIGIN : North Africa and South Caspian Sea.

Introduction: The broad bean is a hardy plant and can withstand sufficiently cold temperatures. This is the only bean which is sown in autumn and is grown as a winter crop.

- The Broad bean (*Vicia faba* L.) also known as faba bean or horse bean is a minor leguminous crop grown in localized areas in India but is an important food crop of South America.
- It is the only bean grown as a winter crop.
- Broad bean is used as green, shelled and dry beans and as a feed for livestock. Plants have distinguishing features like square and erect growing stems which grows up to 30cm (dwarf varieties) to 100 cm (tall varieties).
- It is pollinated by insects. Clusters of white black branched flowers arise in the axils of the leaves.
- The pods are borne upright in clusters of 3-5 or more fleshy beans.
- Broad bean is being grown on small scale in Utter Pradesh, Punjab, Haryana, Kashmir, Rajasthan, Karnataka, Madhya Pradesh and Bihar.
- The pollen grains and green pods cause allergy to some people which is known as fauvism (Haemolytic anaemia)

CLIMATIC REQUIREMENTS

- Broad bean is a hardy plant.
- It is grown mainly at higher altitudes where the climate is relatively cool.
- It is the only bean, which can withstand cold (up to 4oC), therefore, it is grown as winter crop.

SOIL CONDITIONS

- It prefers rich, well drained loamy soil with pH range of 5.5 to 6.0.
- Acidic soils are not good for broad bean.
- It can tolerate salinity up to some extent.
- Land should be prepared thoroughly by giving repeated ploughings to get fine tilth.

VARIETIES

Pusa Sumeet:

- Plants are 75 cm tall having on an average 5-7 branches/plant.

- A plant bears about 100pods.
- The pod length and thickness is 6.0cm and 1.3cm, respectively.
- It has attractive dark green pods and borne in cluster.
- The average yield potential is 180q/ha.
- Besides the above varieties “Selection BR-1” and “Selection BR-2” are black and yellow seeded varieties, respectively developed from Bihar.
- Jawahar Viva 73-81 is a dormant type, reported from Madhya Pradesh.

Some Exotic Varieties introduced from Abroad

Long pod type:

- Aquadule Claudin, Imperial White Long Pod, Masterpiece Green Long Pod, Imperial Green Long Pod, Red Epicure.

Windsor Type:

- Imperial White Windsor, Giant four seeded Green Windsor, Imperial Green Windsor

SEED RATE AND SOWING

- Sowing is done in the month of September-October and February-March.
- About 70-100 kg/ha seed is required for cultivation.
- The seeds are sown in shallow furrows of 15cm width with a spacing of 75cm.
- In each furrow, two rows of seeds are sown at a spacing of 25cm in a zigzag manner along the furrows.
- It can be sown in a single row system with spacing of 45x15cm.

NUTRIENT MANAGEMENT

- The field is given deep digging and farmyard manure is applied at the rate of 10 tonnes/ha along with NPK at the rate of 20:50:40kg/ha, respectively.
- Entire quantity of phosphorus, potash and half quantity of nitrogen is to be thoroughly mixed in the soil at the time of field preparation.
- The remaining nitrogen is to be top dressed at flowering time along with irrigation.

Use of PGR

- In beans, the success of pollination, fertilization and fruit set depends on the prevailing weather conditions.
- Certain plant growth regulators like PCPA @ 2ppm, alpha-naphthyl acetomide @ 2-25ppm or beta-naphthoxy acetic acid @ 5-25ppm, when sprayed at prevailing temperature or when normally pods do not set, induce fruit set.
- Thus by spraying some plant growth regulators, early, higher and total yield can be obtained.

IRRIGATION AND CULTURAL PRACTICES

- Immediately after sowing, the field has to be irrigated.
- This is followed by light irrigation on the third day.
- Thereafter, light irrigation should be given at regular interval of 12-15days.
- Regular intercultural operations should be carried out by hand weeding and hoeing to keep the weeds under check and to provide a good environment for crop growth.
- Tall varieties may be given support with wooden sticks or twigs against wind.
- Place stakes or canes at one meter interval on both sides of the double rows close to the beans.
- Then tie around the stakes with twine 30-60cm above the ground.

HARVESTING, YIELD AND STORAGE

- The pods are ready for harvesting in 3-4months for spring sowing and 6-7 months for autumn sowing.
- Very young pods are preferred by most people.
- The beans are harvested at the green shell stage as needed for home use or for market and those remaining on the plant are used as dry shell beans.
- A pod yield of 7-10tonnes/ha and green bean yield of 1.8-2.0q /ha is expected.

DISEASES OF BROAD BEAN

- Yellow mosaic, Anthracnose, *Phytophthora* pod rot, rust, angular leaf spot, ashy stem blight and *Rhizoctonia* root rot are some of the diseases affecting bean crop.

Control:

- The disease can be effectively controlled by spraying copper oxychloride @0.3per cent.
- Root rot can be controlled by drenching captan @0.2per cent.
- Foliar fungal diseases can be controlled by spraying mancozeb @0.25per cent.
- Rust can be controlled by spraying wettable sulphur @0.2per cent and fungicides like hexaconazole (0.05%) etc.

PESTS

Thrips

- Thrips may be problem in very dry weather.
- Severely infested flowers wilt, fade and drop prematurely without bearing fruits.
- They lacerate the leaf tissue and imbibe the oozing sap.
- Pale and silvery sheens appear on the affected leaves.
- Some thrips are also vectors of viral diseases.

Control measures

- Spray the crop with cypermethrin 0.0075% or dichlorvos 0.04% as soon as the attack is noticed.
- If harvesting coincides with spray, spray immediately after harvest and wait for 15 days for another harvest.

Mites

- These are very small pests and remain mostly on the under surface of leaves.
- Damage is caused by the larvae, nymphs and adults by sucking the cell sap from under side of leaves, flower buds and flowers.
- When population is high, it results in bronzing and curling of leaves and discolouration of flowers and leaves.
- Webbing of leaves, sepals and petals occur which give untidy look to the plants.
- The infestation is more in dry weather and under poly house conditions.

Control measures

- Remove the old and infested leaves and burn them.
- Try to avoid dry conditions and spray frequently with plain water at least twice a week with sprinkler.
- Observe the plants regularly for mite population and if incidence is noticed, spray the crop with insecticides like profenofos (0.05%) or fenazaquin (0.0025%) or propargite (0.057%).