



FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES

Brinjal

Botanical name : *Solanum melongena*

Family : *Solanaceae*

Chromosome No. : $2n = 24$

Origin : *India*

Common name : *Eggplant, Aubergine*

Economic importance and uses

- It is an annual crop cultivated all over India.. The fruits are available practically throughout the year. Brinjal fruits are a good source of calcium, phosphorus, iron and vitamins particularly 'B' group. Analysis of 100 g of edible fruit contains 91.5g of water, 6.4 g of Carbohydrates, 1.3g of Protein, 0.3g of fat and 0.5g of mineral matters. Its green leaves are the main source of vitamin C (38-104.7mg/100g).

Description of popular varieties and hybrids

- In brinjal a large variation in plant types, fruit colour, shape and size are available. Two main types namely round and long are cultivated throughout India. The following are important cultivars grown in India.

I. Long varieties

Pusa Purple Long:

- It is a selection from a local variety 'Batia' grown in Punjab, Delhi and western UP. It is early maturing cultivar becoming ready for picking in 100 to 110 days. Fruits are glossy, light purple in colour, 25-30 cm long, smooth and tender. The

average yield varies from 250-275 quintals/ha. It is moderately resistant to shoot borer and little leaf disease.

Pusa Purple

Long Pusa Purple
Cluster Pusa Kranti

Pusa Purple Cluster:

- It is a very early maturing cultivar becoming ready for picking in 75 days after transplanting. Fruits are small, dark purple in colour and borne in clusters. On an average, each fruit weigh about 21 g with bearing of 50 fruits per plant. This cultivar is resistant to bacterial wilt and little leaf disease.

Pusa Kranti:

- This cultivar is dwarf and spreading habit. Fruits are oblong with attractive purple colour. This cultivar is good for both spring and autumn planting under north Indian conditions. The average yield varies from 25-30 t/ha.

Krishnanagar Green long:

- It is a very popular variety in south India. Fruits are long, green and fleshy with scanty seeds. The average yield varies from 25-30 t/ha.

Arka Sheel:

The fruits are medium long, with deep shining purple colour. The duration of this is 150 to 160 days. The yield varies from 35 to 40 t/ha.

Arka Kusumakar:

- The finger shaped fruits are borne in clusters. Plants are dwarf in stature. Fruits are small, light green in colour and yield is 45 t/ha in 110-120 days.

Arka Anand :

- It is a high yielding F1 hybrid with resistance to Bacterial wilt. Suitable for Kharif and Rabi. Avg fruit weight is 50-55 gm. Yields 60-65 t/ha in 140-150 days.

Arka Keshav (BWR-21) :

- Derivative of the cross Dingrass Multiple Purple X Arka Sheel through pedigree method. Tall & branched plants bearing long fruits in clusters. Red purple glossy fruit skin with green calyx. Green leaves with purple leaf base and purple veins when young. Light purple green stem. Fruits tender with slow seed maturity with no bitter principles. Resistant to bacterial wilt. Duration 150 days. Yield 45 t/ha. A

Arka Navneeth:

- A F1 hybrid between IIHR 22-1 and Supreme Green angular leaves. Large oval fruits with deep purple shining skin. Calyx green, thick and fleshy. Average fruit weight 450gm. Free from bitter principles with very good cooking qualities. Duration 150-160 days.

Arka Neelkanth (BWR-54):

- Derivative of the cross Dingrass Multiple Purple X Arka Sheel through pedigree method. Tall & compact plants Bearing small fruits in clusters. Violet blue glossy fruit skin with green purple calyx. Dark green leaves with purple leaf base and purple veins when young. Purple green stem Fruits tender with slow seed maturity with no bitter principles. Resistant to bacterial wilt. Duration 150 days. Yield 43 t/ha.

Arka Nidhi(BWR-12):

- Derivative of the cross Dingrass Multiple Purple X Arka Sheel through pedigree method. Tall & compact plants Bearing medium long fruits in clusters, Blue black

flossy fruit skin with green purple calyx. Dark green leaves with purple leaf base and purple veins, when young. Deep purple green stem. Fruits tender with slow seed maturity with no bitter principles. Resistant to bacterial wilt. Duration 150 days. Yield 48.5 t/ha.

Arka Shirish (IIHR 194-1):

- Pure line selection from IIHR 194-1, a local collection from Karnataka Tall plants, green leaves with white flowers Fruits green, extra long. solitary bearing habit. Duration 140-150 days. Yield 39 t/ha.

H -4:

- It has been released from HAU, Hissar. The fruits are long, thick with deep shining purple in colour. The average yield is 25 t/ha.

Punjab Barsati:

- It is released from PAU, Ludhiana. Fruits are 18-20 cm long and 4-6 cm in diameter. The average yield 350-400q/ha.

Pant Smart:

- Released from GBPUAT, Pantnagar. Plants are tall and vigorous, medium long fruits borne in clusters. Purple green in colour, resistant to bacterial wilt and tolerant to shoot and fruit borer.

Azad Kranti:

- Erect plant, narrow leaf, long fruits, dark purple in colour and fruit weighs 62g. The average yield is 30t/ha.

II. Round varieties

Pant Rituraj:

- Semi erect plant. Fruits are round, dark purple in colour. Resistant to bacterial wilt and yields 40t/ha.

Pusa Purple Round:

- Fruits are purple in colour and each fruit weighing about 400-500g. It is highly resistant to little leaf virus diseases. Average yield varies from 25 to 30 t/ha.

Manjri :

- It is a selection from a local material recommended by the Department of Agriculture, Maharashtra state. The fruits are medium sized, round with purple colour. Average yield 27.5-30 t/ha.

Krishnanagar Purple Round:

- The fruits are large sized, round and dark purple in colour. Average yield varies from 25-30 t/ha.

Punjab Bahar:

- The fruits are round with deep shining purple colour. The average fruit weighs 200-300g and yield varies from 35-40t /ha.

Hybrids:

Pusa Anmol:

- It is a hybrid cultivar evolved from a cross between Pusa Purple Long and Hyderpur at IARI. It produces early and increased yield of about 80% over Pusa Purple Long.

Pusa Hybrid-5:

- Plants vigorous, fruits long, glossy, attractive, dark purple in colour. Fruit weighs about 100g. Average yield is about 52t/ha.

Pusa Hybrid-6:

- plants semi erect, vigorous, glossy, attractive purple colour.

Azad hybrid:

- It is cross between Azad B1 and Kalyanpur-3. Plants semi erect, branched, early fruiting and round, yields about 45 tonnes/ha. Less prone to shoot and fruit borer infestation.

Hisar Shyamal (H-8):

- Aushey X BR112. Plants erect, early, round fruits, tolerant to bacterial wilt.

Arka Navneet:

- IIHR221XSupreme. Fruits round to slightly oval in shape. Big size (400 to 500g). Yields about 65-75t/ha.

F1 hybrids:

- Commercially marketed by IAHS in India are Long 13, Suphal and Round 14. Some of the F1 hybrids released by MAHYCO Seed Company are MHB-1, MHB-9 and MHB-20 (Kalpatharu).

Vijay hybrid:

- It has been released from Vegetable Research Station, Kalyanpur. The fruits are long, thick and deep purple in colour. It takes about 102 days for harvesting the edible matured fruit. The average yield is 400 q/ha.

Pusa Kranti:

- (Pusa Purple Long X Hyderpur) X WG (Wynad Gaint). It is a medium duration variety, fruits are long, dark purple in colour and bears 35t/ha.

Pusa Bhairav:

- PPL X 11a-12-2-1. Fruits are long, purple in colour and bears in clusters. Average yield is 30 tonnes/ha. Resistant to phomopsis blight and fruit rot.

Climate and soil

Climate

- Brinjal is susceptible to severe frost. A long and warm growing season with temperature range of 21-27°C is most favourable for its successful production. Climatic conditions especially low temperature during the cool season cause abnormal development of the ovary (Splitting) in flower buds which then differentiate and develop into deformed fruits during that season. Late cultivars, however, withstand mild frost and continue to bear some fruits. The brinjal grown in warm season shows luxurious growth and starts bearing from the initial flowers, while in cool season its growth is poor and slow and fruit size, quality and production are adversely affected.

Soil

- The brinjal can be grown practically on all soils from light sandy to heavy clay loam soils are good for an early crop, while clay loam and silt loam are well suited for higher yield. Generally silt loam and clay loam soils are preferred for brinjal cultivation. The soil should be deep, fertile and well drained. The soil pH should not be more than 5.5 to 6.0 for its better growth and development.

Seasons

- Brinjal can grow under a wide range of climatic conditions. The sowing and transplanting time varies according to agro climatic condition of the region. Under the harsh climate of North India two sowings are normally done 1. June-July for autumn- winter crop 2. November for spring summer crop. Sowing time in other parts of the country is from June-September and again in December-January. In hilly regions sowing of seed is done from March- April and seedlings are transplanted in May.

Nursery

- Raised beds should be prepared (7.5×1.2×10-15cm) and seeds are sown in rows of 7.5 to 10cm apart. The beds are prepared well and levelled and one centimetre thick layer of farm yard manure is to applied and mixed properly. The seeds should be covered properly by a mixture of FYM and soil. As soon as the sowing is completed the bed should be covered with a thin layer of dry grass and kept moist till the seeds germinate. To avoid fungal diseases, the seeds should be treated with captan or thiram at the rate of 2g/kg of seed. For safe guarding, the seedlings should also be sprayed with mancozeb at a concentration of 2g/litre. About 250-375 g seed is sufficient to cover one hectare of land with 30,000-45,000 seedlings. The seedlings are ready for transplanting in about 4-5 weeks.

Harvesting and yield

- Brinjal fruits are harvested when they have developed a good colour and marketable size, are still immature, tender and have not lost culinary qualities. The fruits are harvested with stalk at joint where they are attached to the branch. Normally the plucking can be done at 7 to 10 days depending upon the variety. Yield of brinjal vary according to the region, cultivar and duration of the crop. Early crop normally yields 20-30 t/ha. While long duration crop yields 35-40 t/ha. Many F1 hybrids yield about 40-80t/ha.

Storage and post harvest handling

- Brinjal green fruits had longest shelf life of 4 weeks based on the PLW discoloration, spoilage and CO₂ injury during storage at 8-10°C under controlled atmosphere with initial concentration of 5% CO₂. The fruits can also be stored for 7-10 days in fairly good condition at 7.2-10°C with 85-95% RH.