NEW ERA AGRICULTURE MAGAZINE

Scientific cultivation of Brinjal

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Introduction:

Brinjal (*Solanum melongena* L.) belongs to the family Solanaceae, chromosome number 2n=24, origin India. A crop grown in warm weather and requires a warm growing season. It is very susceptible to frost. The growth of the crop is majorly affected when temperature falls below 17 degrees Celsius. It can be successfully grown in a rainy and summer season crop and can grow at an elevation of 1200m above the sea level. It is an annual crop cultivated all over India. 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). Dark purple brinjal has more vitamin C than those with white skin. Bitterness in brinjal is due to presence of glycoalkaloids. Generally, high amount of glycoalkaloids (20mg/100g) produces a bitter taste and off flavour.

Brinjal have de-cholestrolising action due to the presence of poly unsaturated fatty acids (linoleic and linolenic) which are present in flesh and seeds of fruit in higher amount (65.1%). The presence of Mg and K salts also helps in de-cholestrolising action. White brinjal is good for diabetic patients. The fruits are employed as a cure for toothache. It is also an excellent remedy for those who suffering from liver complaints.

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.
- For processing purposes, the fruit should have more dry matter content and low level of phenols.
- The discolouration of brinjal fruits is attributed to the high polyphenol oxidase activity.
- The cultivars that are least susceptible to discolouration are considered suitable for processing.

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Improved open pollinated varieties of Brinjal

Pusa Purple Round, Pusa Purple Long, Pusa Purple Cluster, Pusa Kranti, Arka Shirish, Arka Sheel. Arka Kusumkar, Punjab Barsati, Azad Kranti, ,Arka Navneet, Jamuni Gol, Manjiri Gota, Pant Samrat, Punjab Sadabahar, Hisar Shyamal, Pant Rituraj, Pusa Anupam, Punjab Neelam, Pusa Bhairab, Annamalai, Pusa Bindu, Pusa Ankur, Bhagyamati.

Public sector hybrids

Arka Navneet, Pusa Hybrid-5, Pusa Hybrid-6, Pusa Hybrid-9, NDBH-1 NDBH-6, ABH-1, ABH-2, Krishna, CoBH-1, Neelam.

SOIL AND CLIMATIC REQUIREMENTS

- Eggplant prefers a soil that is deep, fertile, well drained, high in organic matter, and has a pH of 6.0 to 6.8.
- A sandy loam soil is ideal when an early yield is desired. Heavy clay and saturated soils should be avoided due to the build-up of root rotting diseases.
- Brinjal should follow a leguminous crop to enrich soil fertility.
- A long growing season of about 120-150 days is required for successful production depending upon the season of growing.
- A long and warm growing season with average temperature range of 21^0C –27^0C is most suitable.
- Extreme temperature (below 15^0C and above 30^0C) adversely affects the reproductive growth.
- 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.
- When temperature and humidity are high, eggplant becomes more vegetative.

SEED REQUIREMENT

- 375 to 500g seeds of open pollinated varieties and 150 to 250g seeds of hybrids are required per hectare.

Planting time

- July-August (for Autumn – Winter crop i.e., main season crop)
- January-February (for Spring – Summer crop).
- April-May (for Summer-Rainy crop)

Sowing 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.

Preparation of land

Soil is prepared to fine tilth by giving 4-5 ploughings. Well rotten organic manure (25t/ha) is incorporated into the soil well before the final preparation.

Nutrition

It is a heavy feeder of nutrients and requires more nutrients for better yield and quality. As already mentioned 25 tonnes of FYM should be added 25 to 30 days before transplanting. NPK application is done in the form of inorganic fertilizers. Apply 25% of nitrogen as in the form of top dressing 6 weeks after transplanting and the remaining 25% N should be added in to soil 10 weeks after transplanting.

Irrigation

It requires several irrigations for successful cultivation. Timely irrigation is essential for fruit set and its development. Usually the crop is irrigated weekly once for higher yield. Proper drainage facilities should be provided in rainy season to remove excess of water from the field. Drip irrigation is beneficial for decreasing water use and weed control.

Mulching

The most beneficial effect of mulching is that it conserves soil moisture and controls weeds. Mulching in brinjal crop with black polyethylene film reduces weed growth, accelerates crop growth, induces early bearing and increases yield.

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.

Major Insect-Pest

The crop is attacked by a number of insect pests including shoot and fruit borer, whitefly, leafhopper, aphid, Hadda beetle, Stem borer, Lacewing bug, Brinjal brown leafhopper, and Leaf roller. Besides these insects brinjal is also attacked by mites, which results in significant losses in the yield.