

## Pusa Hara Baingan 1: A new green brinjal for commercial cultivation

**Brinjal is one of the most common, popular and principle vegetable crop grown worldwide for its excellent food value, shape, size and colour. It is also known as 'Poor Man's crop' as it is mainly grown by the small and marginal farmers. It is highly productive having wide adaptation and easily available throughout the India. Brinjal is also a good source of phytochemicals such as phenolic acid (Chlorogenic acid), flavonoids and anthocyanin which act as antioxidants protecting the body against many degenerative diseases. Pusa Hara Baingan 1 is the first green coloured oval fruited variety which has been released and recommended by the Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Horticultural Crops for cultivation in National Capital Region of Delhi including Delhi and its adjoining areas i.e states of Haryana, Rajasthan and Uttar Pradesh.**

**P**USA Hara Baingan 1 has been developed by single plant selection from an indigenous variable material collected from farmer's field of Malda district, West Bengal. It is suitable for cultivation during *kharif* season under North Indian conditions. The plants are non-spiny having erect branches with light purple pigmentation on younger leaves, mid-rib and veins. Fruits are big oval, green in colour with light purple patches. The average weight of each fruit is 210-220 g with a non-spiny calyx. Fruits are ready for harvest from 55-60 days after transplanting. It gives an average yield of 40-45 t/ha. The fruits have high antioxidant activity (3.41 CUPRAC  $\mu$  mol trolox /g, 3.07 FRAP  $\mu$  mol trolox /g) as compared to Pusa Uttam (2.03 CUPRAC  $\mu$  mol trolox/g, 1.13 FRAP  $\mu$  mol trolox/g) and Pusa Kranti (1.97 CUPRAC  $\mu$  mol trolox/g, 1.03 FRAP  $\mu$  mol trolox/g). The average yield performances of Pusa Hara Baingan1 over the years in different locations are given in Table 1 and 2. The growers will be benefitted with this variety because of its high yielding potential, non-spiny calyx, attractive green colour, less number of seed at marketable stage.

### Cultivation practices

Pusa Hara Baingan1 can be grown in all types of soil ranging from light sandy to heavy clay soil. However, well drained, fertile, silt or clay loam soils are ideal with a pH of 6-7. It requires a long and warm growing season with an average temperature ranging between 25-30°C for optimum growth and production. About 300-350 g of seed is sufficient for raising seedlings for one hectare land. Seeds are sown in finely prepared raised nursery beds about 5 cm apart and 1 cm deep. The seed bed should be covered with dry grass for early emergence of seedlings followed by sprinkle with water. The nursery bed should have good drainage facility to avoid the problem



Pusa Hara Baingan 1 at fruiting stage



Field view of Pusa Hara Baingan 1

**Table 1.** Mean performance of Pusa Hara Baingan at IARI, New Delhi during 2013-14, 2014-15 and 2015-16

Variety	2013-14		2014-15		2015-16	
	Total fruit yield (t/ha)	% Increase over check	Total fruit yield (t/ha)	% Increase over check	Total fruit yield (t/ha)	% Increase over check
Pusa Hara Baingan 1	43.45	42.69	46.42	45.74	44.25	49.69
Pusa Uttam	30.45	-	31.85	-	29.56	-

**Table 2.** Mean performance of Pusa Hara Baingan at different locations during 2013-2014

Variety	IARI Regional station, Karnal, Haryana		IARI-KVK, Shikohpur		Seed Production Unit, IARI, New Delhi	
	Total fruit Yield (t/ha)	% Increase over check	Total fruit yield (t/ha)	% Increase over check	Total fruit yield (t/ha)	% Increase over check
Pusa Hara Baingan 1	38.72	17.47	40.15	19.88	42.54	17.39
Pusa Uttam	32.96	-	33.49	-	35.14	-

of water logging and damping off disease. The beds may be drenched with captan @ 2-3 g/litre of water at an interval of 15 days. Once the seeds germinated, the grass should be removed immediately and sprinkle with captan solution. The seedlings should be watered regularly and hardening of seedlings should be done by withholding

water 4-5 days before transplanting.

#### **Transplanting and fertilizer management**

About 30-35 days old seedlings are ready for transplanting when they have obtained 12-15 cm height having 3-4 leaves. The land should be prepared well in





**Pusa Hara Baingan 1 for seed extraction**

advance with atleast 4-5 times repeated ploughings to a fine tilth followed by pre-planting spray of Pendimethalin @ 3 litres/ha should be given after light irrigation. The root of seedlings should be soaked in captan solution for 15 min and planted at a spacing of 75 cm (row to row) × 75 cm (plant to plant) in ridge. Irrigation should be given immediately after transplanting. About 25-30 t/ha of well decomposed farmyard manure along with 50-55 kg urea, 325-350 kg of single super phosphate and 75-100 kg MOP per hectare should be mixed in soil at the time of field preparation. Two topdressing of urea at 50 kg each should be applied at 4 weeks after transplanting and again at one month interval. It requires irrigation at 10 days interval or depending upon the weather condition. Frequent shallow inter-cultivation is done few days after irrigation to remove weeds, to conserve soil moisture and to facilitate soil aeration for proper root development.

#### **Plant protection**

*Fusarium* wilt can be managed by drenching root zone with Carbendazim 12% + Mancozeb 63% WP. *Phomopsis* blight or fruit rot can be controlled by treating the seeds with captan @ 3 g/kg before sowing and spraying the affected plants with Dithane-M-45 @ 2.5 g/litre of water. Plants affected with little leaf and viruses should be uprooted in the early stages as well as spraying with acetamiprid 20% SP @ 100 g/ha for controlling the vector. Fruit and shoot borer is the most harmful insect pest in brinjal which can be managed by using pheromone trap @ 12 trap/ha during transplanting. The lure should be changed at an interval of 30 days. The affected shoots and fruits should be removed and buried to the soil to avoid further spread. Spraying of spinosad @ 5 ml/10 litre of water is effective when the seedlings established in field and again before flowering or at fortnight interval for controlling shoot and fruit borer.

#### **Harvesting and Yield**

Fruits are ready for harvesting 55-60 days after transplanting when they become shiny green in colour with marketable size and still immature and tender. The average yield is 400-450 q/ha.

#### **Seed production**

Seed production of Pusa Hara Baingan 1 can be done throughout the year except that the maturity of fruits should not coincide with the rainy season. It is an often cross pollinated crop, therefore, an isolation of 400, 200 and 100 m from other varieties of brinjal is essential for breeder, foundation and certified seed production, respectively. The flowers are purple in colour which opens at 7:30-11.00 AM in the morning with peak anthesis between 8.30-9.30 AM. A minimum of three inspections needs to be done i.e. a) before flowering b) at flowering and fruit setting stage and c) at fruit maturing stage. The diseased and infected plants should be removed from the seed production field. The fully matured and ripened fruits are usually handpicked when the fruit colour has turned yellow. The ripened fruits are then stored in room temperature for 3-5 days so that the fruit becomes soft and it will be easier for seed separation from the pulp. The fruits are crushed by beating and soaked in water to separate the seeds from the pulp followed by sun drying for 2-3 days till the moisture content of the seeds reaches 8% or below. The average seed yield is 100-120 kg/ha.

For further information, please write to:

**Ravinder Kumar, A D Munshi, T K Behera, Y A Lyngdoh, Dr B S Tomar (Head and Principal Scientist) and Dr Partha Saha (Scientist)** Division of Vegetable Science, ICARI-IARI, New Delhi 110012. Corresponding author e-mail: hortparth@gmail.com