

Pusa Long Green – A high yielding cucumber variety for spring summer and *kharif* season

This article describes the new variety of cucumber Pusa Long Green which has been released and recommended by AICRP (vegetable crops) for commercial cultivation in Zone IV during both spring summer and *kharif* season.

THE cucumber (*Cucumis sativus* L.), also known as *Khira* in Hindi is a very popular and important vegetable grown in hills and plains of India. It is used as salad, for pickle, *rayata* preparation and also as cooked vegetable. It has a cooling effect, prevents constipation, acts as appetizer, and is useful in jaundice. Cucumber has great economic importance as food plant. Due to good taste and low energy content, regarded as refreshing condiment. The nutritive value of seed protein of cucumber is comparable to those of legumes and the seeds are used in various *Ayurvedic* preparations. In north Indian plains, generally two crops are taken in a year, viz. spring-summer and *kharif* season crops. The consumer preference in India is long cylindrical type medium thick indigenous (*desi*) variety of cucumber with high yielding ability. The National check variety

of cucumber Pant Khira-1 is medium long type and significantly lower in yield as compared to the new variety Pusa Long Green which has been released and recommended by AICRP (vegetable crops) for commercial cultivation in Zone IV (Sub-humid Sutlej-Ganga Alluvial Plains, i.e. Punjab, Uttar Pradesh, Bihar and Jharkhand) during both spring summer and *kharif* season. It was subsequently notified by central sub-committee on crop standards, notification and release of varieties of horticultural crops during the year 2019.

Pusa Long Green (DC-83)

It is developed from local material collected from Chhutmalpur, district Saharanpur, Uttar Pradesh. Selfing and individual plant selections were carried out to purify the material and develop the variety.

Vine length is 2.0-2.5 m with 3-4 branches. Leaves are medium green with lobed margin. Plants are monoecious; female flower solitary on short peduncle, yellow in colour and male flowers are borne in clusters. Fruit is attractive light green in colour with mild whitish green stripes (originating from the blossom end of the fruit) and brownish green blotchy patches are present near the stem end. Fruits are 15-18 cm long, non-hairy, with soft skin, crispy and tender flesh. Average fruit weight is 150-160 g.

Performance of Pusa Long Green

Pusa Long Green (DC-83) has been tested in yield trial at several



Plant and fruits of 'Pusa Long Green'

centers throughout India in AICRP (vegetable crops) trials from 2015-16 to 2017-18 along with check Pant Khira-1. The results indicated that Pusa Long Green yielded 18.93 t/ha which was 34.93% higher than check Pant Khira-1 (Table 1). At multilocation testing DC-83 had fruit length of 18.60 cm (Table 2) and average fruit weight 161.35 g (Table 3).

Cultivation

It can be grown successfully on all type of soils but prefers well-drained loam and sandy loam soils rich in organic matter. The seed rate is 1.5-2.0 kg per hectare. As a spring-summer crop, it is sown from mid February to February end, and as *kharif* season crop in June-end. The seeds are sown in the hills 45-60 cm apart on the slope of channels prepared at a distance of 2.0 m. The spacing between channels is increased to 2.5 m when sowing is done on both the sides. Two to three seeds are sown 2 cm deep in each hill. Bower or trellis system of training is preferred during *kharif* season to obtain high yield and disease free crop.

Fertilizer management

Apply 15-20 tonnes of well-rotten organic manure per hectare before field preparation and 100 kg urea, 200 kg single super phosphate and 80 kg muriate of potash at the time of last ploughing. Another dose of 50 kg urea should be top-dressed at 8-10 leaf stage. Spray 1% urea if crop growth is poor.

Interculture

When seedlings become 8-10 cm tall, thinning should be done to keep 1 or 2 seedlings per hill. Since the crop is shallow rooted, earthing up is essential to cover the roots properly, especially in rainy season crop. It requires 2-3 hoeing and weeding.

Plant protection

Drenching with ridomil @ 2 g/litre and blitox @ 3 g/liter of water is necessary to prevent the seedlings from damping off and other root borne diseases. Downy mildew and virus are the major problem during *kharif* season. A need based spray of Imidachlorpid @ 0.3 ml/l or Acetamiprid @ 0.3 g/ litre of water followed by Dimecron @ 2 ml/litre of water at two weeks interval should be applied judiciously to prevent the crop from important sucking pests like aphid and whitefly.

Harvesting and yield

Fruits become ready for first harvesting in 45-50 days and 50-55 days after sowing during *kharif* and spring-summer season, respectively. Average yield under normal conditions is 18.93 t/ha which is 34.93% higher than National check Pant Khira-1.

Seed production technology

Cucumber is primarily monoecious, bearing separate staminate and pistillate flowers on the same plant. Male flowers occur in clusters with each flower on a slender stem and having three stamens. Female flowers are usually solitary with stout and short pedicel. Nectar is produced by male as well as female flowers. Bees visit the flowers for nectar. Female flowers produce a higher volume of nectar than male flowers.

Anthesis and dehiscence of anther takes place during early morning hours. Pollen remain fertile 7 to 8 hours after anthesis. Honeybees are the major pollinating agents. To increase fruit set, the pollination can be enhanced by supplementing the natural bee population with additional bee-hives in the field. At least two bee-hives should be placed per acre.

For seed production, an isolation distance of 400 m for certified seed and 800 m for foundation seed and at least

Table 1. Mean performance of Pusa Long Green (DC-83) in AICRP (VC) from 2015-16 to 2017-18

Entry	IET (2015-16)	AVT-I (2016-17)	AVT-II (2017-18)	Average yield (t/ha)	% increase over check
DC-83	20.52	18.30	17.96	18.93	34.93
Pant Khira-1 (Check)	14.19	13.27	14.62	14.03	

Table 2. Average fruit length (cm) of Pusa Long Green (DC-83) in AICRP (VC) from 2015-16 to 2017-18

Entry	IET (2015-16)	AVT-I (2016-17)	AVT-II (2017-18)	Average fruit length (cm)
DC-83	18.53	16.48	20.78	18.60
Pant Khira-1 (Check)	18.26	17.40	19.82	18.49

Table 3. Average fruit weight (g) of Pusa Long Green (DC-83) in AICRP (VC) from 2015-16 to 2017-18

Entry	IET (2015-16)	AVT-I (2016-17)	AVT-II (2017-18)	Average fruit weight (g)
DC-83	189.07	144.09	150.90	161.35
Pant Khira-1 (Check)	193.17	151.04	134.67	159.62

1000 m isolation is required for breeder seed production.

Seed crop should be raised in such a season which remains dry at the time of seed maturity and seed extraction. Seed crop is to be monitored and rouging should be done at four stages of crop growth, viz. before flowering stage, flowering stage, fruit development stage and fruit maturity stage for removal of off-types.

On an average, cucumber takes a maturity period of 35-40 days from fruit set for seed production. The full mature fruit is indicated by the ripe rind colour characteristics of the variety (pale yellow to golden yellow or brown). The fruit stalk adjacent to the fruit withers when seed is mature. The matured fruits are cut longitudinally and seed along with the placental material is scooped out. Seeds are washed slowly with care in running water. The piece of rind, coarse material from the seed and fine pulp are separated. Fermentation is usually avoided as it discolours the seeds and reduces the germination percentage. Seeds are spread on tarpaulin sheet under partial shade. The seeds should be dried till

the moisture content reaches to 10% and can be stored under ordinary room temperature. When seeds are to be stored in vapour proof containers, moisture content should be 6%. Average seed yield is 300-450 kg/ha.

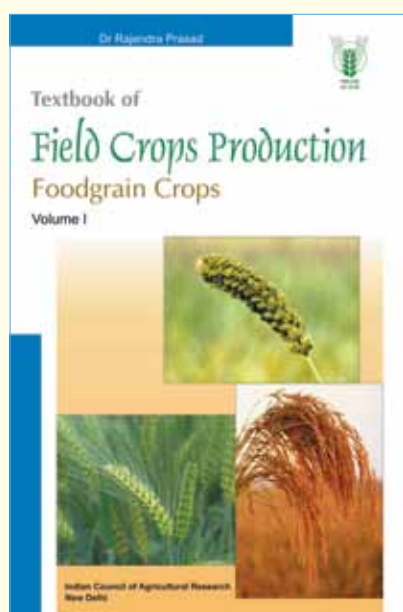
SUMMARY

Pusa Long Green is an early long fruited, improved variety of cucumber for spring-summer and *kharif* season cultivation, developed by IARI for Zone IV (Sub-humid Sutlej-Ganga Alluvial Plains, i.e. Punjab, Uttar Pradesh, Bihar and Jharkhand). Apart from superior quality characters, it showed 34.93% higher yield over the National check variety Pant Khira-1.

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TECHNICAL SPECIFICATIONS

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