

Thar Jyothi: New photo-insensitive variety of cowpea

A new highly photo-insensitive, high yielding and early maturing variety of vegetable cowpea, Thar Jyothi, has been developed by Central Horticultural Experiment Station (ICAR-CIAH), Godhra, Gujarat. This variety was evaluated purely under hot rainfed semi-arid conditions and has been recommended for commercial cultivation under dry land areas.

VEGETABLE Cowpea (*Vigna unguiculata* ssp *unguiculata*) is a warm season, annual and herbaceous legume known by various names such as black-eye bean, China pea, southern pea and lobia. Nutritionally, cowpea is low in saturated fat and very low in cholesterol and sodium. Cowpea is called as vegetable meat due to high amount of protein in grain with better biological value on dry weight basis. On dry weight basis, cowpea grain contains 23.4% protein, 1.8% fat and 60.3% carbohydrates and it is a rich source of calcium and iron.

Striking features of Thar Jyothi

It is a photo-insensitive type and high yielding variety of vegetable cowpea. It grows up to 50-56 cm height, having dark green leaves with dark green pods which can be cultivated round the year. It has short stature (bushy growth habit). It is an early flowering and early maturing variety, and takes 40-42 days for first flowering, and 48-50 days after sowing for first harvesting of fresh tender dark green colour pods. The variety has an average pod length of 25 to 26.50 cm with pod girth of 2.5 cm and pod weight of 9.65 g in rainfed semi-arid conditions. The total number of pods per plant varies between 120-150 and an average yield of 1.5 to 2.0 kg/plant of fresh pods was obtained with yield potential of 20-25 t/ha.

Thar Jyothi is rich in nutritional value in terms of proteins (4.82 g/100 g), vitamin-C (55.8 mg/100 g), calcium (460.5 mg/100 g), magnesium (252.12 mg/100 g), phosphorus (105.64 mg/100 g), sodium (20.3 mg/100 g), potassium (206.5 mg/100 g), iron (5.2 mg/100 g). It contains antioxidants like phenols (2.435 mg/g) and total antioxidant activity (14.0µ.moltrolox.equi./g). The variety

performs well under rainfed semi-arid conditions and has exhibited tolerance to cowpea mosaic virus and rust diseases under rainfed semi-arid conditions.

Cultivation practices

Soil and climate: Cowpea is a warm season crop and comes up well under rainfed conditions where temperature ranges from 21 to 35°C. It can tolerate hardy conditions including high temperature, drought and poor soil with 6-7 pH range. However, different varieties respond differently to different temperatures and day length. Because of this reason, season-specific varieties have been developed for cowpea cultivation in spring/summer and rainy seasons.

Sowing time, spacing and seed rate: In India, the crop is grown in almost all the seasons mainly *kharif* with onset of monsoon from June to July, *rabi*-October to November (Southern India), summer-February-March (grain) in north Indian plains and April-May in hills. The seeds of bushy varieties are sown at a spacing of 30 × 15 cm, and/or semi trailing varieties 45×30 cm. The seed rate of bush cowpea is 20-30 kg/ha for commercial cultivation is recommended.

Manures and fertilizers: Although, cowpea is a legume crop, it responds well to the application of fertilizers. About 25 t/ha of FYM is applied at least 15 days before sowing. A fertilizer dose of 25:75:60 kg NPK/ha is recommended. Half dose of the N while full dose of P and K are applied as basal dose and remaining half N is applied 25 -30 days after sowing.

Intercultural operations: Shallow cultivation during the early stages of crop is necessary to check the weeds and to facilitate earthing up. Two hand weeding are required



General field view of Thar Jyothi



Fresh pods of Thar Jyothi



Matured dried pods for seed harvest

before the earthing up. Cowpea is a hardy crop which comes up well in rainfed conditions. Flowering and pod development periods are the critical stages. It is sensitive to waterlogging and requires less moisture compared to other vegetables. Depending on the atmospheric conditions, two or three protective irrigations may have to be given.

Harvesting and yield

Tender pods are harvested after attaining full size but before becoming hard and fibrous. Harvesting starts 45 days after sowing. In bush type varieties, 10-12 pickings are possible throughout crop's life cycle. Trailing/pole type varieties are usually harvested at alternate days. The green pod yield of improved bush varieties gives 15-20 t/ha fresh pods in semi-arid conditions of western India.

SUMMARY

Thar Jyothi is a photo-insensitive and high yielding variety of vegetable cowpea. It is an early flowering and early maturing variety. It has short stature (bushy growth habit) and it can be cultivated round the year. The variety performs well under rainfed semi-arid conditions and it has tolerance to cowpea mosaic virus and rust diseases under rainfed semi-arid conditions.

For further interaction, please write to:

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List of improved varieties / hybrids of Cowpea (*Vigna unguiculata*)

Variety	Area of adoption	Salient features
Pant Lobia 7 (PGCP 24)	Northern part of the country	Suitable for rainfed and irrigated, conditions, yield 11.0–12.0 q/ha, protein content 27%, maturity 70–75 days, and resistant to YMV.
Jammu Lobia Super 60	Jammu Province of Union Territory of Jammu and Kashmir	Suitable for rainfed, <i>kharif</i> season, yield 12.0–12.5 q/ha, maturity 60–65 days, resistant to wilt, YMV and pod-borer, and lodging resistant due to dwarf in stature.
PGCP 6	Karnataka	Suitable for early and late <i>kharif</i> sowing condition, yield 9.0–10.0 q/ha and early maturity (70–75 days).
KBC 11 (KC 8)	Karnataka	Suitable for late summer season, yield 11.0–12.0 q/ha, late maturity (95–100 days), medium duration, bold and light seed.
Sahyadri Yukthi (UAHS 28)	Karnataka	Suitable for late <i>kharif</i> and summer season of zone 4 and 7 of Karnataka, yield 12–13 q/ha, early maturity (80–85 days), short stature and grown well in limited moisture conditions.
PDKV Rutuja (AKCP 8-2-2)	Maharashtra	Suitable for <i>kharif</i> and summer season, pod yield 80–85 q/ha, protein content in pod 4.77%, maturity 45 days for first picking, and moderately resistant to yellow mosaic virus.

Source: ICAR Annual Report 2022-23