

Technology For Higher Pulses Production in Bihar

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Grain legumes though have formed an important place in our agriculture since millennia as source of protein to vegetarian dietary, soil fertility builder and as an important constituent of feed of the livestock's, their production potentials have been low. Production of a crop increase only when package of production technology developed for agro- ecology and socio-economic, services and public policies are mutually re-in forcing and are in harmony with each others.

Greengram (*Vigna radiata*), known as moong or mungbean in India. It is the third important pulse crop of India after chickpea and pigeon pea. Its utilization as food in many forms, haulms is used as fodder and green manure. Due to its shorter duration, it can be fitted in several multiple cropping systems. Pulse crops, inclusion of green gram in cropping systems improves soil health and fertility.



Causes of low Production:

- ❖ Larger emphasis on production of cereals specially with the availability of high yielding management responsive varieties.
- ❖ Under realization of the importance of pulses in diet.
- ❖ Non –availability input responsive varieties.
- ❖ Poor extension of developed production technology leading traditional scheme of production characterized with
- ❖ Low plant population
- ❖ Rare utilization of fertilizers and insecticides

- ❖ Use of traditional or local varieties
- ❖ Poor care after the harvesting the crops.

Attention on these aspects are strongly needed for the increase in the possibility of increase in yield thus, the pulses production can be increased.

- Increase in the area
- Adoption of newer technology to the farmers.
- For getting the higher yields of Mungbean & Urdbean the following production technology should be adopted.

Advantages of Growing Moong:

- The crop has very little or no infestation of insect-pest and diseases because of high temperature and desiccating winds.
- . The crop/varieties take lesser time (normally 60-65 days).
- . The cropping intensity can be increased.
- The area and production can be increased under pulses without eliminating a grain crop to be grown during *kharif* season.
- It utilizes the residual soil fertility when grown after heavily fertilized crop like potato, wheat and winter maize.
- In return it adds at least 30-35 kg available nitrogen/ha through *Rhizobium* fixation which may be adjusted while applying fertilizers in following *kharif* season crop.
- After picking of pods the foliage can be incorporated into soil as green manure.
- To add organic matter into the soil as bonus for boosting soil fertility and improving physical conditions of the soil.

ORIGIN, DISTRIBUTION AREA AND PRODUCTION:

Green gram is primarily a native of India (central Asia) may be a secondary center. Carbonized grains of green gram are found in archaeological sites of Navadatoli – Maheshwar in Madhya Pradesh dating between 1440 and 1660 BC. Green gram is cultivated throughout southern Asia. It is also cultivated in parts of Africa to a smaller extent. About 45 per cent of global production is in India. In India, major green gram producing states are Andhra Pradesh, Odisha, Maharashtra, Madhya Pradesh, Rajasthan, Bihar and Jharkhand.

- Coverage of area and its production was maximum in Rajasthan (32.76% & 30.61%) followed by Maharashtra (11.95% & 10.58%)

- The highest yield was recorded by the state of Punjab (845 kg/ha) followed by Jharkhand (704 kg /ha) and Andhra Pradesh (696 kg/ha).
- The lowest yield observed in state of Karnataka (227 kg/ha.) followed by Chhattisgarh (326 kg/ha.) and Odisha (327 kg/ha.)

Mungbean Varieties And Its Suitability With Seasons:

Improved variety	Duration (Days)	Season/Sowing	Yield (Q ha ⁻¹ .)	Suitability
PUSA VISHAL	70 - 75	Kharif : Mid-June to first week of July (mixed or intercrops). Rabi : Second fortnight of October to first week of November is the optimum sowing time. (Sole crop). Late Rabi : Relay crop in <i>kharif</i> standing crop of rice in Peninsular India. Sowing time is from December to end of January or even early February. The crop comes up with the residual soil moisture. It is grown as sole crop. Summer : As a sole crop optimum sowing time is from third week of March to second week of April. As a relay crop, it is sown a week before the harvest of wheat (May) Followed by irrigation.	12- 15	NEPZ
SMRAT	60 - 65		12 - 14	NEPZ
SONA	60 - 65		09 - 10	NEPZ
SML - 668	65 - 70		15 - 18	NEPZ
HUM - 16	60 - 65		15 - 18	NEPZ
PUSA VISHAL	70 - 75		12 - 15	NWPZ
GANGA 8	72-75		12 - 14	NWPZ
SATYA	65 - 70		12 - 15	NWPZ
IPM 02-03	65 - 70		12 - 14	NWPZ

NEPZ: Bihar, Jharkhand

NWPZ: Punjab, Haryana, Western UP, Uttrakhand, Delhi & Rajasthan

Tillage Seeding and Plant Population:

There is no need for a fine seedbed. One or two ploughings followed by harrowing is adequate for a *kharif* crop. Green gram on deep soils during *rabi* is usually on *kharif* fallows that are kept weed free by repeated harrowing. There is no tillage for late *rabi* (relay crop) as the seed is broadcasted in standing crop of rice about a week before its harvest, for a summer crop, tillage depends on the time available between the harvest of the standing crop and seeding of green gram.

Seed Treatment: Apply fungicides @ 2 – 2.5 gm Carbendazim or Thiram for 1 kg seed and after 3-4 hr intervals used Rhizobium culture @ 5 pkts./ha.



Nutrient Management:

Sowing Pattern or Seed requirements:-

- a) **Small Grains** – 20-25 kg ha⁻¹
- b) **Bold grains** – 30-35 kg ha⁻¹
- c) **Spacing** – 30 cm x 10 cm. (Row to Row 30 cm) and (Plant to plant 10 cm.)

Fertilizer management:

Application of nutrients as per recommendation as below:

N: 20 kg ha⁻¹ : P₂O₅ - 45kg ha⁻¹ : K₂O - 20 kg ha⁻¹ : Sulphur - 20 kg ha⁻¹

Water Management:

Crop	Total No. of Irrigation	Time of application	Total irrigation requirements (cm)
Summer / Rabi(Moong)	1-2	<ul style="list-style-type: none"> • Pre sowing (If needed). • Flower initiation stage. 	06 - 12

Weed Management:

Weeds are major problem in rainy and post rainy season greengram compared with summer irrigated crop.

- ✓ Apply as pre-emergence - Pendimethalin @ - 1 kg ha⁻¹ in 500 - 600 lit water.
- ✓ Apply as post-emergence - Quizalofop ethyl @ 1.5 ml/lit. Water at 15 - 25 DAS .

Plant Protection Measures:

Generally attacks trips or white fly on the crops then for which plant protection measures can be taken as given below.

- ✓ Basal application: - Application of Thiram or Furadon granular 10 kg ha⁻¹. or
- ✓ Apply chlorpyrifos or monocil @ 1.25 ml/lit. water at flower initiation stage.

Harvesting and Storage:

- The crop comes to harvest in three months..
- However, early varieties will mature in 60 to 65 days.
- To prevent shattering of pods, the crop is harvested before it is dead ripe.
- The plants are uprooted or cut above the ground level with a sickle, dried on a threshing floor for about a week and threshed under the feet of cattle or beating with sticks. One or two hand pickings of pods are common.
- The produce is cleaned and sun dried to about 12 per cent moisture content.
- Method of storage and control of storage pests are similar to other pulse.
- When 75 – 80% pod are mature then crop will be harvested.

Quality Consideration :

On an average, green gram contains 24 per cent protein, 1.2 % fat and 62 % carbohydrates.

- Green gram is primarily consumed in the form of dhal.
- Green pods are also used as vegetable and haulms as green fodder.
- It is an excellent green manure crop.
- Dry seed is boiled and used in soups, made into porridge with rice and wheat.
- Sprouted seed is consumed as salad.
- The flour is used in cakes and desserts.
- Starch is used in making noodles.

Food Value:

- The green gram forms a very nutritious article of diet.
- It is consumed in the form of whole dried seeds and in the form of dal, prepared by splitting the seeds in a mill.
- The sprouted moon beans are a highly nutritious food.
- The beans are soaked overnight, drained and placed in containers in a dark room.
- They are sprinkled with water every few hours and the sprouts are ready in about three days.