

## Green Gram New Era is a Miracle for Soil and Human Health

Lalit Kumar Sanodiya<sup>1</sup>, Mo Naushad<sup>2</sup>, Ashish Prajapati<sup>3</sup> and Vipin Kumar<sup>4</sup>

<sup>1</sup>Assistant Professor, Department of Agronomy, United University, Jhalwa, Prayagraj (U.P.)

<sup>2, 3&4</sup>M.Sc. (Agri.) Agronomy, Department of Agronomy, United University, Jhalwa Prayagraj (U.P.)

ARTICLE ID: 21



The mung bean (*Vigna radiata* L.) is under cultivation since pre-historic time in India. It is also known as green gram and serve are a major source of dietary protein for the vast majority of people. Pulses are considered as lifeblood of Agriculture. Pulses occupy a unique position in every farming system viz., main, catch, cover, green manure, intercrop and mix crop. Their inclusion in rotation kept the soil alive and productive. Pulse crops enrich the soil fertility by means of addition of organic matter and fixation of atmospheric nitrogen mediated

by root nodule of Rhizobium bacteria. They are the cheapest source of quality protein for the human being. One of India's principal pulse crops is green gram, often known as moong. Along with fibre and iron, it provides a rich source of protein. It can be grown as a summer crop as well as a *Kharif* crop. With current production of 18.5 million tonnes, imports of 3-5.4 million tonnes, and consumption of roughly 22 million tonnes, India is one of the world's leading producers of pulses. The five states that produce the majority of the world's pulses—Madhya Pradesh, Rajasthan, Maharashtra, Uttar Pradesh, and Andhra Pradesh—account for around 82 percent of global production on a surface area of about 74 percent. (Priyadharshini *et al.* 2021).

<b>The taxonomy classification of Green gram</b>	
Order	<i>Fabales</i>
Family	<i>Fabaceae</i>
Subfamily	<i>Faboideae</i>
Genus	<i>Vigna</i>
Species	<i>Radiata</i>
Chromosome number	2n=22

Green gram (moong) has been grown in India since the beginning of time. Different regions of the country are home to a variety of this plant, although it is not known to exist in its natural state. *Vigna radiata* var. *sublobata*, which grows naturally in India, Indonesia, and Central Asia, is the closest relative. Since the Stone Age, it has been grown in these areas. It is presumably recent in Africa. It is currently gaining ground in numerous other Asian and African nations.

### **Nutrition value**

Green grams have long been considered as a good source of protein, thus play a crucial role in healthy diets, sustainable food production and in food security.

Amount Per 100 grams	Calories	Daily Value
Total fat	1.2g	1%
Saturated fat	0.3g	1%
Potassium	1.246mg	35%

Total carbohydrate 63g	21%
Dietary fiber 16g	64%
Sugar	7g
Protein 24%	48%
Vitamin C	8% Calcium 13%
Iron	37% Vitamin D 0%
Vitamin B6	20% Cobalamin 0%
Magnesium	47%

#### **Medicinal use:**

The high nutritional and antioxidant content of moong beans may have positive effects on health. In fact, they could help prevent heart stroke, support digestive health, encourage weight loss, and reduce levels of "bad" LDL cholesterol, blood pressure, and blood sugar. Effects of antioxidants. According to research, mung bean components contain a number of antioxidants.

#### **Antifungal and antimicrobial activity**

These include some against the *Helicobacter pylori* bacteria that causes stomach ulcers.

#### **Anti-inflammatory activity-**

Test tube studies suggest that mung bean extracts may have potential to improve symptoms of inflammatory conditions, such as allergies.

#### **Diabetes**

Studies in rats suggest mung bean extracts may help lower blood glucose levels.

#### **Hypertension**

Studies in rats suggest sprout extracts may help lower blood pressure.

#### **Cancer**

Test tube studies suggest that compounds in mung beans may have antitumor properties.

#### **Nutritional use:**

Besides being a nutritious food, green gram possesses potential health benefit such as antioxidant, anticancerous, antioxidant, anti-inflammatory and hypolipidemic activities. Green gram has prebiotic and nutraceutical properties.

**Pharmaceutical Use:**

Boost immune system, lower inflammation, maintain high blood pressure, treat diabetes, prevent cancer, and improve gut and intestinal health.

**Green gram cropping requirements that are ideal**

- ✚ **Soil:** A variety of soil types, including laterite soils in South India, black cotton soils in Madhya Pradesh, and sandy soils in Rajasthan, are used to grow the crop known as "green." A well-drained loamy to sandy loam soil is best suited for green gram cultivation.
- ✚ **Seed rate:** During *Kharif* season 12-15 kg seed per hectare should be sown in rows 45 centimeter apart while during *Rabi* and sown in rows 30 centimeter apart.
- ✚ **Varieties of green gram:** Pusa- 9072, Pant Moong-1, Pant Moong-2, Pant Moong-3, Pant Moong-4.
- ✚ **Climate:** Green gram is best suited to areas having an annual rainfall of 60 to 75 cm. It requires a hot and warm climate.
- ✚ **Water:** The total amount of water requirement in green gram is 300 mm to 400 mm. If water logging conditions seen at flowering and pod filling, it reduces the yield up to 75% and more.
- ✚ **Temperature:** Green gram grows best in a range of 30°C and 40°C, but temperatures above 40°C result in significant flower shedding.
- ✚ **Irrigation:** Depending on the soil and weather conditions, irrigate every 7 to 10 days. Flowering and pod formation stages are critical periods when irrigation is a must. Avoid water stagnation at all stages. Apply KCl at 0.5 per cent as foliar spray during vegetative stage if there is moisture stress.

**Weed Control:**

Weed management green gram is a weed that can be controlled. Pendimethalin pre-emergence treatment utilizing a backpack, knapsack, or rocker sprayer equipped with a flat fan nozzle and 500 litres of water per hectare on the third day after sowing in an irrigation situation or 2.5 litres per hectare in a rainfed situation.

**Photo period:**

High mean temperatures (25°C to 28°C) and extended photoperiods in green gram lead to temperature x blooming interactions (photoperiods 15 to 16 h).

Plant height: It ranges from 15 to 125 cm.

### **Sowing and Seed**

Sowing is one of the most crucial tasks because it is at this stage that seedlings emerge, which affects plant density and eventual yields. Depending on the location to be planted, the variety, and other factors, green gram seeds are seeded at various times.

### **Green gram farming as an intercropping enterprise**

Wide row spacing makes it easier for plants to branch, which speeds up both their growth and that of weeds. As a result, inter-row cultivation should be done when growing green gram crops. In green gram farming, mechanical weeding is typically carried out. First weeding is done when the plant reaches a height of 20 to 25 cm. If the seedlings are grouped together or need to be transferred to a location with more water availability, thinning is also advised.

### **Important green gram pests and diseases**

Being a relatively new crop, there are less studies on specific pests and illnesses that affect green gram, including two of the most serious insect problems: "hairy caterpillar."Galerucid Beetle. Major disease affecting green gram on a global scale is yellow mosaic virus.

Hairy Caterpillar is a pest that can seriously harm green gram crops by consuming all of the leafy green material. Large clusters of eggs are laid by the adult moths of these caterpillars, and the young larvae are also gathered together. At the seedling stage, the red hairy caterpillar could harm the crop. Damage can range in severity.

**Control:** Gather and destroy the egg masses.

To effectively control it, apply quinalphos 25 EC @ 1.5 lit/ha or chlorpyrifos 20 EC @ 1.5 lit/ha. Spraying cypermethrin 10 EC @ 650 ml, indoxacarb 15.8 EC @ 300 ml, or 100 ml chlorantraniliprole 18.5 SC (Coragen) using 300 litres of water can also be used to control it.

### **Leaf Hopper:**

The adults and nymphs of this hopper suck the juice from the leaves. Generally, the insect sucks sap from the lower surface of the leaves but also occasionally from the upper

surface. As a result of sucking the sap, the leaves turn brown and curl from the edge.



**Leaf Hopper**



**Yellow Mosaic**

**Control:**

For effective control, spray Nimbecidine or Achook @ 2500 ml or flonicamid 50 WG (Ulala) @ 200 g or dinotefuran 20 SG (Osheen) @ 150 g by using 200-300 liters of water.

**Disease:**

**Yellow Mosaic Virus**

Both in Uttar Pradesh and other northern Indian states, the disease is pervasive. Within a month of sowing, the disease's symptoms start to manifest. This region first became apparent as a scattering of yellow, rounded specks on leaf lamina. These spots spread quickly, and the leaves display yellow patches in addition to their normal green colour. After first symptoms, the newly developing leaves exhibit these signs right away. Lately, the damaged leaves fully yellow and shrink in size.

**Control:**

Insecticides should be sprayed on the crop twice or three times. They consist of Bifenthrin 10% EC @ 1 ml/L water or Dimethoate 30 EC @ 1 ml/L water. As soon as the symptoms start to show in the crop, the first spray should be applied.

**Crop rotation:**

Because moths overwinter in the pupal stage, crop rotation aims to prevent soil fertility exhaustion and break the pest life cycle. In order for the pupae to be exposed to birds and other predators, crop rotation necessitates that the soil be tilled before planting a new crop.

**Light traps:**

Light traps are devices that draw moths so they can be caught and killed. A strong light source and a capture device with water and a tiny bit of detergent to lower surface tension and keep the insect from escaping are the essential components of the design.

**Using pheromone traps:**

Traps to draw in male moths is a recent addition to pest management techniques.

**Light traps****Pheromone traps****Use of bio-insecticides and environmentally friendly pesticides:**

Organic farming typically makes use of bio-insecticides and environmentally friendly pesticides. They are environmentally friendly and biodegradable.

**Yield:** Generally on an average yield of 12 to 15 quintals of grain per hectare.

**Conclusion:**

Green gram originated in India and is currently grown extensively in the states of A.P., Bihar, M.P., Maharashtra, U.P., and W.B. despite the introduction of several high yielding and disease resistant cultivars through routine breeding methods, production area and productivity in India have essentially stagnated at 1.2 million tonnes, 3 million hectares, and 400 kg/ha, respectively, over the past 20 years. Because it has a low glycaemic index, it

increases the release of insulin, which lowers blood sugar and fat levels. The crop is harvested before it is fully mature in order to prevent loss due to pods breaking. To prevent losses due to shattering, one or two rounds of pod picking are also advised. The plants are pulled out by the roots or hacked with a sickle, dried on the threshing floor for a week or ten days, threshed by beating with sticks, and winnowed using baskets. Grain yields from pure crops range from 5 to 6 q per ha on average, although they can reach up to 15 q per ha.

**References:**

- Dixit, P. M. and Elamathi, S. (2007). Effect of foliar application of dap, micronutrients and NAA on growth and yield of green Gram (*Vigna radiata* L.) Legume res., **30**(4): 305 – 307.
- Lalit, M., Patil, Modi, D. J., Vasava, H. M. and Gomkale, S. R. (2014). Evaluation of Front Line Demonstration Programme on Green gram Variety Meha (IPM-99- 125) in Bharuch district of Gujarat **8**(9): 01-03.
- Malik, A., Fayyaz-Ul- Hassan,, Abdul Wahieed A., Qadir G., and Asghar, R. (2006). In reactive effects of irrigation and Phosphorus on green gram *Vigna radiata* L, *Pakistan J Bot*, **38**(4):1119- 1126.
- Patel, H.R., Patel, F.H., Maheriya, V.D. and Dodia, I.N. (2013). Response of *Kharif* green gram (*Vigna radiata* L.) to sulphur and phosphorus with and without biofertiliser application. *Bioscan*, **8**(1): 149-152.
- Priyadarshini, A. S., Singh, V., Tiwari, D., Karthik, B., and Mahesh, K. (2021). Influence of Spacing and Organic Manures on Growth, Yield and Economics of Mung Bean (*Vigna radiata* L.). *Biological Forum – An International Journal* **13**(1): 617-62.