

Line Sowing of Mung Bean through Seed-cum-Fertilizer Drill



Mung bean (green gram), a major pulse, is grown in 33.8 lakh ha in India and 8.75 lakh ha in Odisha with a productivity of around 476 kg/ha. To achieve higher productivity and profitability, farmers have to maintain proper depth, row-to-row spacing and fertilizer placement. To facilitate manual/mechanical weeding, mung bean should preferably be sown using seed-cum-fertilizer drill.

Mung bean is a potential crop for sustainable intensification and addressing rice-fallows in Odisha. Being a legume crop, it requires proper drainage and ample aeration in the field that will ensure nitrogen fixing bacteria to work at all stages of crop growth.

Field Preparation

To get benefit of residual soil moisture and advancing sowing of mung bean, particularly in coastal area of state, harvest the rice crop at proper time, avoid longer sun drying in *situ* and vacate the field within 2-3 days by stacking the harvested produce near threshing area or in one corner of the field for drying and threshing. Then, employ 2-3 ploughing followed by planking/leveling (with laser land leveler, if available) to make the seedbed free from clods and weeds.

Sowing and Seeding Equipment

For precise seeding, mung bean can be drilled with good quality seed-cum-fertilizer drill fitted with vertical seed and fertilizer metering system or preferably with zero-till seed-cum-fertilizer drill fitted with fluted roller. Power tiller-operated seeder (PTOS) or seed-cum fertilizer drill for 2-wheel tractors can also be used for sowing, if available.

- Seeding depth: 3-5 cm
- Row-row spacing: 25-30 cm
- Sowing time: December-January

Note: In coastal areas, generally sowing should be done in residual soil moisture up to 15 January but in lowland ecologies, it could be delayed due to delayed rice harvest and/or wet soil conditions. Also, in other areas, where temperature remains low up to mid-January and until soil moisture becomes sub-optimal, farmers may opt for local mungbean variety “*Jhany*”

early in residual soil moisture or can grow black gram as para crop (traditional practice) or mungbean can be sown in lines with machine after applying pre-sowing irrigation even up to mid-February. This practice will help avoid these areas lying fallow under rainfed ecologies, which is otherwise common.

Suitable Varieties

Short duration (~60-70 days) and HYV (TARM-1, Pusa Vishal, PDM-11, PDM-54, PDM139, SML-668, Pant Moong-2) and YMV resistant (IPM2-14, IPM 2-03, OBG-52)

Seed Treatment

- Treat the seed with Thiram or Carbendazim @ 2 g/kg of seed, one day before sowing, or,
- With talc formulation of *Trichoderma viride* @ 4 g/kg of seed to control seed-borne and soil-borne fungal diseases.
- Also treat the seed with *Rhizobium culture* and PSB. Take 200 g of *Rhizobium culture* and 200 g PSB for 8 kg seed. Take 50 g of *jaggery* and make solution in 500 ml of water. Then add 200 g of *Rhizobium* and 200 g PSB in the solution and mix it well. Sprinkle this slurry over 8 kg of aforesaid treated seed and mix it well to make coating over the seed, and then dry under shade. Sow the seed within 24 hours of inoculation.

Note: First treat the seeds with chemical/bio-control agents and then after one day with *Rhizobium culture* + PSB.



Mung bean sowing with seed-cum-fertilizer drill

Fertilizer Management

Situation	Nutrients required (kg/acre)		
	N	P ₂ O ₅	K ₂ O
For irrigated condition	8	16	8
For rainfed condition	5	10	4

Note:

1. Apply 35 kg of DAP and 13 kg MOP per acre under irrigated conditions.
2. Apply 25 kg DAP, 7 kg MOP per acre under rainfed conditions.
3. DAP should be applied as basal through seed drill while MOP should be broadcasted as basal.

Weed Management (use any one option given below)

- One or two manual/mechanical weeding at 3-5 WAS depending on weed infestation
- Pendimethalin (Stomp 30% EC) @ 1 kg ai/ha i.e. 1.25 lit/acre (product) as PRE
- Quisalofop-ethyl (Turga super 5% EC) @ 37.5g ai/ha i.e. 400 ml/acre as POE at 20-25 DAS
- Imazethapyr (Pursuit 10% SL) @ 75g ai/ha i.e. 300 ml/acre as early POE (nearly 20 DAS)
- Imazethapyr + Imazamox (Odyssey 70% SL) @ 70g ai/ha i.e. 40 ml/acre as early POE (nearly 20 DAS)

Note: Use spray volume of 200 l/acre. Chemical weed control may be supplemented with one manual weeding to control late emerging weeds, if needed.

Insect-Pest and Disease Management

Based on recommendation of SAU, the options for plant protection are as under:

Insect-Pest Management

- i. Gram pod borer and spotted pod borer:
 - Install bird perches @ 20/acre
 - Spray neem oil @ 600 ml/acre and need based spraying of indoxacarb 14.5 SC @ 200 ml/acre or trizophos40 EC @ 400 ml/acre
- ii. Sucking pests complex (aphids, leaf hopper, pod bugs):
Spray acetamiprid 60 g/acre or thiomathoxam 80 g/acre
- iii. Whitefly: Spray acetamiprid 60 g/acre or thiomathoxam 80 g/acre

Disease Management

- i. Yellow mosaic virus (YMV): Infected plants should be removed. Control whitefly which is vector for YMV. Use YMV resistance varieties.
- ii. Cercospora leaf spot: Spray Carbendazim 300 g/acre or mancozeb 600 g/acre at initiation of the disease and 10 days later.
- iii. Powdery mildew: Spray wettable sulphur @ 800 g/acre or carbendazim @ 300 g/acre.

Note: Use spray volume of 150-200 l/acre.

Advantages of line sowing over broadcasting

- Use of lesser seed rate
- Optimum seeding depth
- Uniform and optimum plant population
- Opportunity for basal fertilizer application through seed-cum-fertilizer drill
- Good soil and seed contact improve seed germination
- Ease in intercultural operations
- Business opportunity as Service Provider through custom hiring
- Improved productivity and profitability



Tentative Cost of Cultivation per Acre

Operation	Cost (in Rs)
Land preparation	1,000
Cost of seed	960 (@ Rs 120/kg)
Seed treatment	150
Line sowing with seed drill	500
Weed Management	
a. Herbicide	400-500
or	
b. Manual weeding	1,500-2,000
Pesticide	500
Fertilizer	720 (rainfed) 940 (irrigated)
Irrigation*	1,000
Harvesting	1,600-3,000 depending upon number of pickings
Threshing	600

*In coastal Odisha, mung bean is mainly grown as rainfed crop. In irrigated condition, generally two irrigations (one as pre-sowing and one at flowering) are required.