2. GREEN GRAM

Varieties:

Kharif: LGG 450, LGG 407, LGG 460, TM 96-2, Pusa 105, PDM 54, WGG 42

***Rabi*-Uplands:** LGG 460, LGG 407, TM 96-2, WGG 42
Rice fallows: LGG 460, TM 96-2, LGG 410, LGG 407
Summer: LGG 460, PDM 54, LGG 407, WGG 42

Soils/Areas: All types of soils with good drainage facilities. Saline soils are not suitable.
Land Preparation: Land should be prepared to fine tilth with 2 ploughings followed by harrowing.

Sowing time

Optimum sowing time limitsfor different seasons

Kharif	: June 15th – July 15th.
Rabi (ID)	: 15th October to 15th November
Rabi rice fallows	: 15th November to 15th December
Summer rice fallows	: March.15th to March ending.
Summer (ID)	: February – March 15th

Seed rate & spacing

Kharif	–	15-16 kg/ha; 30 x 10 cm.
Rabi (ID)	-	15-16 kg/ha; 30 x 10 cm.
Rabi (Rice Fallows)	-	30-32 kg/ha
Summer	-	16-18 kg/ha

A 25% higher than the normal population i.e 3.3 lakhs/ha should be maintained under late sown conditions.

The rest of the following packages of practices are common for both black gram and green gram

Fertilizer management

20:50:0 N:P:K kg/ha. is required for optimum yields. Integrated nutrient management is necessary. Seed treatment with *Rhizobium* culture @ 500 g/ha. If the seed is treated with fungicide / insecticide the dose will be 1 kg/ha. Application of *Rhizobium* can save 20 to 25 % of required nitrogen. Along with nitrogen farmers can use phosphorous solubilising bacteria (PSB @ 5 kg /ha) can be applied which can convert the unavailable phosphorous into available form.

Inter-cultivation and Weed management

Spray pendimethalin @ 1-1.5 l/acre in 200 L of water within 48 hours after sowing (as a pre emergence). Intercultivation with gorru and guntaka at 20 and 40 DAS wherever possible. If it is not possible, application of Imazithapyr @ 200 ml/acre to control post emergence weeds

at 25 - 30 DAS. If the broad leaved weeds are dominant. Use Quizalofop-ethyl @ 400 ml/acre, if the grassy weeds are dominant.

Irrigation : Usually grown as rainfed. Irrigate twice if water is available at 30 to 50 DAS to get higher yields.

Pest management:

Stem fly: Seed treatment as above. Spray acephate @ 1.0 g/l or monocrotophos @ 1.6 ml/l or dimethoate @ 2.0 ml/l twice at weekly intervals from 10 days after sowing

Flea beetles: Seed treatment as above. Spray acephate @1.0 g/l or monocrotophos @ 1.6 ml/l if the incidence is more severe

Thrips: Spray either monocrotophos @ 1.6 ml/l acephate @ 1.0 g/l or fipronil @1.0 ml/l

White fly : Foliar application of 5 % NSKE at 20 DAS as prophylactic spray against whitefly that transmits YMV. Spray monocrotophos @ 1.6 ml/l or triazophos @ 1.5 ml/l or acetamiprid @ 0.2 g/l.

Aphids: Spray either acephate @ 1.0 g/lor monocrotophos @ 1.6 ml/l or imidacloprid @ 0.3 ml/l.

Maruca Pod borer

- Monitor the occurrence of adult moths at flower bud initiation stage of blackgram/greengram (i.e at 35-40 DAS).
- Application of 5% NSKE or neem oil @ 5 ml/l should be taken up before flower bud initiation to avoid egg laying by Maruca adults.
- Spray acephate @ 1.0 g or chlorpyriphos @ 2 ml/l or quinalphos @ 2.5 ml or thiodicarb @ 1.0 g at the time of flowering initiation. Add dichlorovos @1.0 ml/l to the above chemicals if more number of webbings were observed in the crop.
- In case of severe incidence spray either novaluron @ 1.0 ml or spinosad @ 0.3 ml or emamectin benzoate @ 0.4 g or chlorantraniliprole @ 0.3 ml or flubendiamide @ 0.2 ml/l
- First spray should be given one week before flowering initiation as and when the adult population is noticed in the crop.
- Use 500 liters of spray fluid per hectare with hand compression sprayer
- Use 150-170 liters of spray fluid per hectare and increase the insecticide dose three times while using power or Taiwan sprayer,
- Repeat the spray twice at 7 days interval by changing the insecticide depending on the intensity of the pest.
- Do not spray the crop during early morning hours until the dew on leaf surface dries off

Tobacco caterpillar

Adoption of IPM practices such as

- Erection of Pheromone traps @ 10/ha
- Growing of castor as trap crop to monitor egg laying and hatching,
- Collection and destruction of skeletonized leaves along with first instar larvae.
- Spraying of SNPV @ 500 LE/ha.
- Spray either chlorpyriphos @ 2.5 ml/l or acephate @ 1.0 g/l or quinalphos @ 2 ml/l against early instars.
- Apply poison bait containing rice bran, jaggery and insecticide (carbaryl /chlorpyriphos / monocrotophos) @ 10:1:1 ratio against grown up caterpillars at the evening hours.

IPM Practices in blackgram and greengram

- Seed treatment with either Imidacloprid 600 FS @ 5 ml or Thiamethoxam 70 WS @ 5g /kg seed
- **Intercropping with redgarm** (7:1)
- **Erection of yellow sticky** traps for monitoring of whiteflies
- Spraying of 5 % NSKE or neem oil @ 5 ml/lt (3000 ppm) as prophylactic spray at 20 and 35 DAS against both whiteflies and Maruca pod borer
- Need based application of recommended insecticides

Disease management

Collar rot: Seed treatment with captan/ thiram / mancozeb / carbendazim @ 2.5 g per kg seed

***Anthracnose* and *Cercospora* leaf spot:** Seed treatment as above. Spray with carbendazim @ 1 g/l or mancozeb @ 2.5 g/l twice at 10 days interval.

Powdery mildew: Spray carbendazim @ 1 g/l or thiophanate methyl @ 1 g/l twice at 10 days interval soon after noticing the disease.

Angular black leaf spot: Grow resistant varieties like LGG 407, LGG 450. Spray carbendazim @ 1g/l twice at 10 days interval.

Plant Protection Schedule in rice fallows

30-35 days : First spray with copper oxy chloride @ 3 g or mancozeb @ 2.5 g/l to control *Corynespora* leaf spot.

45-50 days : Second spray with dinocap @ 1 ml + mancozeb @ 2.5 g/l to control powdery mildew and *Corynespora* leaf spot.

60-65 days : Third spray with tridemorph @ 1 ml or dinocap @ 1 ml + mancozeb @ 2.5 g/l to control rust, *Corynespora* leaf spot and powdery mildew.

Yellow mosaic virus

1. Grow resistant varieties like LGG 407, LGG 460, WGG 37, ML 267, PDM 54 of greengram and LBG 752, PU 31 and T 9 of blackgram
2. Seed treatment with imidacloprid 600 FS @ 5 ml/kg or thiamethoxam 70 WS @ 5 g/kg seed
3. Spraying of 5% NSKE or Neem oil 5 ml/l at 20 DAS as prophylactic measure
4. Roughing of YMV infected plants at initial stages of disease appearance
5. Spray triazophos @ 1.5 ml/l or acetamiprid @ 0.2 g/l for control of whitefly to check further spread of disease.

Leaf curl virus: Seed treatment with imidacloprid 600 FS @ 5.0 ml or thiamethoxam 70 WS @ 5.0 g per kg seed.

Critical Interventions

1. Adoption of line sowing in uplands and maintenance of optimum plant population @ 30-35 plants/sq.m
2. Seed treatment imidacloprid @ 5 ml/kg or thiamethoxam @ 5g/kg or carbosulfon @ 30g/kg seed at the time of sowing
3. Pre emergence application of herbicides for suppression of weeds upto 20-30 days
4. Timely pest and disease management
    a. Plant protection measures should be taken up at flower bud initiation stage for effective management of Maruca pod borer.