

BLACKGRAM

Selection of varieties:

Varieties suitable for all seasons: LBG-20 (Teja), T-9, LBG-623, WBG-26 (Usha), PBG-1, LBG-752, MBG-207

(These varieties are suitable for all seasons cultivation viz., kharif, rabi, summer I.D. and rice fallows).

Varieties suitable for only rabi under I.D: LBG-402, LBG-17, LBG-22, LBG-645 and LBG-685.

Varieties suitable for rabi rice fallows: LBG-648, LBG-402, LBG-22, LBG-611 and LBG-17.

Varieties suitable for summer rice fallows: LBG-20, WBG-26, LBG-623 & PDU-3.

Wilt resistant varieties: LBG-402, LBG-648, LBG-611, LBG-22, LBG-645 & LBG-685.

Powdery mildew resistant variety: LBG-17.

YMV resistant/tolerant varieties: LBG-20, T-9, WBG-26. LBG 752.PU-31.



PU-31



LBG-645



LBG 752

Corenospora leaf spot & rust resistant: LBG-648.

Soils and field preparation:

Blackgram can be grown in moisture retentive, well-drained (Preferably black/alluvial) soil with a P^H of 6 to 7. Saline/alkali soils are not suitable. Blackgram should not be grown on light soils. Prepare the land well for sowing.



LBG-685

Seed treatment : Captan/ Thiram / Mancozeb / Carbendazim @ 2.5 g per kg seed; Carbosulfan @ 30g or Imidacloprid 600 FS @ 5 ml or Thiamethoxam @ 5g /kg seed to protect the crop from sucking pests and diseases upto 15-20 days after sowing. First treat the seed with fungicide and allow to dry for 30 – 60 min, then treat the seed with insecticide and dry them in shade. Later, treat the seed with Rhizobium @ 2 g/kg seed before sowing.

Sowing time

Optimum sowing time limits for 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

Summer (ID) : February – March 15th

Sowing blackgram soon after the onset of monsoon was found ideal during kharif season. The progressive delay in sowing resulted in steady decline in yields. A reduction in yield up to 80% was recorded when sowing was delayed by three weeks from the onset of monsoon mainly due to biotic and abiotic stresses.

Soils/Areas: Medium to deep black soils with good moisture retentive capacity. Avoid cultivation of blackgram on light soils and in areas of uncertain rainfall, as it is sensitive to moisture stress.

Land preparation : Land should be prepared to fine tilth with two ploughings followed by a harrowing.

Seed rate & spacing:

Kharif - 15-20 kg/ha; 30 x 10 cm.

Rabi (ID) - 15-20 kg/ha; 30 x 10 cm.

Rabi (Rice Fallows) - 40-45 kg/ha; Broad casting (40 Plants /m²)
Summer (Rice fallows)

- 40-45 kg/ha; Broad casting (40 Plants /m²)
Summer (ID)

- 18-20 kg/ha; 22.5 x 10 cm.

A 25% higher than the normal population (3.3 lakhs/ha) should be maintained under late sown conditions

Fertilizer management :

- Treat the seed with biofertilizers like Rhizobium and Phosphorous solubilizing bacteria (PSB) @ 500 g each/ha just before sowing.
- Apply 20 kg N, 50 kg P₂O₅/ha basally and incorporate it with gorru.
- No need to apply fertilizers in rice fallows. But spray 2% Urea at flowering and Pod formation stages.

Inter-cultivation and Weed management :

One or two hoeings. Keep the field weed free upto 30 DAS. Apply fluchloralin @ 2.5 l/ha as pre-sowing incorporation or apply Pendimethalin @ 1.5 kg /ha as pre-emergence. The critical period of weed infestation in pulses is the first four weeks.



Water management

- Blackgram needs life saving irrigation when there is a long dry spell.
- Light irrigations are always beneficial.
- Each irrigation should be followed by hoeing for promoting aeration.
- In rice fallows give 1 or 2 irrigations at 30 and 50 days after sowing for better yields.

Rice fallows:

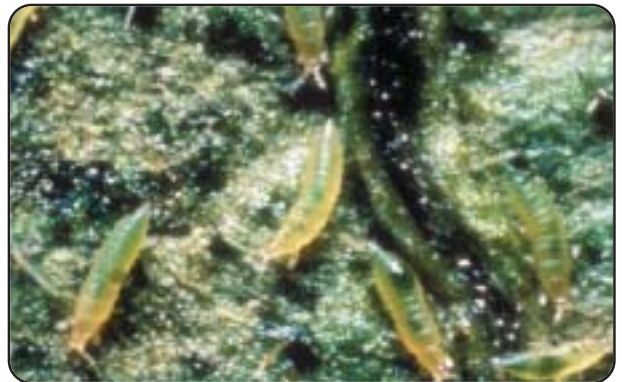
- As there is no field preparation for sowing, the weed growth is severe and effectively competes with the crop.
- Varieties like LBG-402, LBG-611 and LBG-685 and LBG-645 which grow quickly and smother weeds are found best suited in rice fallows
- Quizaloprop ethyl at 50.0g ai/ha, Fenoxoprop ethyl at 56.5 g a.i/ha and Clodino fop propargyl at 52 g a.i/ha and Cyhalo fop butyl at 100g a.i./ha were found effective in controlling the dominant weed Echinochloa colonum and other annual grasses only. Results indicated that all these chemicals were found to be selective to blackgram when applied at 14-28 days after sowing, though Imazetyhapyr at 62.5 gm.a.i/ha had caused initial damage to crop yield.

Pest management

Stemfly : Seed treatment as above. Spray Acephate 1.0 g/lit or Monocrotophos 1.6 ml/lit or Dimethoate 2.0 ml/lit twice at weekly intervals from 10 days after sowing

Flea beetles : Seed treatment as above. Spray quinalphos 2 ml/lit or acephate 1.0 g/lit if the incidence is more severe

Thrips : Spray either acephate 1.0 g/lit or fipronil 1.0 ml/lit



Whitefly : Foliar application of 5 % NSKE at 20 DAS as prophylactic spray against whitefly that transmits YMV.

Spray monocrotophos 1.6 ml/lit or Triazophos 1.5 ml/lit or acetamiprid @ 0.2 g/lit.



Aphids: Spray either acephate 1.0 g/lit or monocrotophos 1.6 ml/lit

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/lt should be taken up before flower bud initiation to avoid egg laying by Maruca adults.
- Spray Acephate 1.0 g or Quinalphos 2.5 ml or Thiodicarb 1.5 g at the time of flowering initiation. Add Dichlorovos 1.0 ml/lt 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 g or emamectin benzoate 0.4 g or chlorantraniliprole 0.3 ml or flubendiamide @ 0.2 ml/lt



- First spray should be given one week before flowering initiation as and when the adult population is noticed in the crop.

Tobacco caterpillar

Adoption of IPM practices such as

- Erection of Pheromone traps @ 10/hectare
- Growing of castor as trap crop to monitor egg laying and hatching,
- Collection and destruction of skeletonised leaves along with first instar larvae,
- Spraying of SNPV @ 500 LE/ha.
- Spray either chlorpyrifos 2.5 ml/lt or acephate 1g/lt or quinolphos 2 ml/lt against early instars.



- Apply poison bait containing rice bran, jaggery and insecticide (Carbaryl /Chlorpyrifos / Monocrotophos) @ 10:1:1 ratio against grown up caterpillars at the evening hours.

Disease management

Collar rot : Seed treatment as above.

Anthracnose, Cercospora and Alternaria leaf spots : Spray twice Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Mancozeb (0.25%) at 15 days interval.

Corynespora leaf spot : Spray twice Copper oxychloride (0.3%) or Mancozeb (0.25%) at 10 days interval.



Powdery mildew : Spray twice Carbendazim (0.1%) or Thiophanate methyl (0.1%) at 10 days interval soon after the appearance of the disease.



Rust : Spray twice Karathane (0.1%) + Mancozeb (0.25%) or Tridemorph (0.1%) twice at weekly intervals at 50-55 DAS.

Yellow mosaic virus : Grow resistant varieties such as LBG 752,T9 and Pant U 31 (Pu31) for YMV and follow seed treatment with Carbosulphan 30 g/ Imidacloprid 5 ml/ Thiomethoxam 5g per kg of seed both for YMV and leaf curl.



Plant Protection Schedule in rice fallows:

- 30-35 days : First spray with Copper oxychloride @ 3 g or Mancozeb @ 2.5 g/lit to control *Corynespora* leaf spot.
- 45-50 days : Second spray with Dinocap @ 1 ml + Mancozeb @ 2.5 g/lit to control Powdery mildew and *Corynespora* leaf spot.
- 60-65 days : Third spray with Tridemorph @ 1 ml or Dinocap @ 1 ml + Mancozeb @ 2.5g/lit to control rust, *Corynespora* leaf spot and Powdery mildew.

II. 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 Thiomethoxam @ 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.

BENGALGRAM

Varieties : **Desi**: JG-11, Annegiri, ICCV10, ICCV-37, **Kabuli**: KAK-2, ICCV-2, PhuleG-95311, LBeG-7

Sowing : October 15th to end of November

Soils : Medium to deep black soils

Seed rate : 60-65 kg/ha

\Spacing : 30 x 10 cm

Fertilizers : 20 kg N, 50 Kg P₂O₅, 40 kg S/ha as basal dose

Inter-cultivation: Twice at 20 and 30 DAS,

Weed Control: Spray Fluchloralin at 2.5 l/ha as pre-sowing incorporated or spray Pendamethalin at 3.0 to 4.0l/ha immediately after sowing or at next day

Irrigation : Rainfed, but One or two light irrigations at flowering and pod formation Stage will increase the yields

Pest control:

IPM practices against Helicoverpa

- a) Follow Stripcropping of bengalgram with coriander (8:2or16:4)
- b) Sow 4 rows of sorghum all round the plot
- c) Transplant 50-100 marigold seedlings all round the plot
- d) Monitoring with pheromone traps @ 10/ha to target the pest at right stages.
- e) Use bird perches (50/ha)
- f) Use neem formulations for insect repelling (NSKE 5%) soon after the pest occurrence.
- g) Use biocides like BT @ 1 kg/ha and NPV @ 500 LE/ha twice at an interval of 7-10 days in the evening hours.
- h) If necessary spray Endosulfan 2 ml/lt or Chlorpyriphos 2.5 ml/lt or Quinolphos 2 ml/1 or Acephate 1 g/l, 700-800 lts of spray fluid per ha.

Disease Control

Wilt : Seed treatment with Captan or Thiram 2.5 g/kg seed or Trichoderma (4g/kg).

Grow resistant varieties like JG-11, JAKI-9218, ICCV-37, KAK-2, LBeG-7.

Dry root rot: Seed treatment with Captan or Thiram 2.5g or Rhizocin 2.5 g/kg seed Grow resistant variety - ICCV 10.

Stunt: Destruction of diseased plants. Grow resistant variety Jyothi, Use optimum seed rate and maintain good population.

Post Harvest Technology

Storage : Properly dried un-infested produce can be safely stored in Nylon bag, polythene lined gunny bag or compactly knitted gunny bag even upto a period of 180 days.

Recommendations for bengalgram:

1. Use higher seed rate (30 kg/ha) in late sown conditions under double cropping system in coastal districts.
2. Reduce the number of insecticide sprays during vegetative stage.

II. CRITICAL INTERVENTIONS

1. Maintenance of optimum plant population(30-35 Plants/sq.ml.)
2. Seed treatment with captan or thiram@3gms/kg
3. Pre emergence application of herbicides for suppression of weeds upto 20-30 days
4. Timely pest and disease management
5. Foliar nutrition of KNO₃ @ 10g/lt in saline soils
6. Light irrigation at 30-35 days after sowing will increase the yield.