

Groundnut Package of Practices

DESCRIPTION OF GROUNDNUT VARIETIES

Particulars	TMV 7	TMV 10	TMVGn 13	CO 3	COGn 4
Parentage	Pureline selection from Tennessee white	Spontaneous mutant from Argentina	Selection from Pollachi red	Derivative of VG 55 X JL 24	Derivative of TMV 10 X ICGV 82
Duration (days)	100-105	120-130	100-105	115-120	115-120
Average Yield of					
Pods kg/ha					
Rainfed	1100	1700	1613	1750	1500
Irrigated	1900	-	2580	2150	1950
Shelling %	74	77	71.4	70	70
100-seed weight (g)	36	43	44	65	60
Oil content %	49.6	54.4	50	49.2	52.7

Particulars	COGn 5	TNAU CO 6	ALR 3	VRI 2	VRI 3
Parentage	Multiple cross derivative	Derivative of CS 9 X ICGS 5	Derivative of (R33-1 X ICGV 68) X (NCAC 17090 X ALR 1)	Derivative of JL 24 X CO 2	Derivative of J11 X R 33-1
Duration (days)	125-130	125-130	110-115	100-105	90
Average Yield of Pods kg/ha					
Rainfed	1585	1914	2095	1790	1670
Irrigated	-	-	2720	2060	1830
Shelling %	70	73.5	69	74.8	73
100-seed weight (g)	47	48.5	46	49.0	35
Oil content %	51	49.5	50	48	48
Special features	Dark green foliage, tolerant to foliar diseases	Dark green foliage, tolerant to foliar diseases	Suitable for rainfed, rust resistant, tolerant to late leaf spot	Suitable for Irrigation	Early and suitable for intercropping
Growth habit	Semi- spreading	Semi- spreading	Bunch	Bunch	Bunch
Leaf colour	Dark green	Dark green	Dark green	Ashy green	Light green
Seed colour	Red testa	Tan testa	Rose	Light rose	Light rose

Particulars	VRIGn 5	VRIGn 6	VRIGn 7
Parentage	Derivative of CG 26 X ICGS 44	Derivative of ALR 2 X VG 9513	Derivative of TMV 1 X JL 24
Duration (days)	105-110	120-125	120-125
Average Yield of Pods kg/ha			
Rainfed	2133	1916	1865
Irrigated	2384	2403	-
Shelling %	75	75	72
100-seed weight (g)	46	36	46
Oil content %	51	50	48
Special features	High reproductive efficiency. Dormancy 45 days	Small pods, moderately resistant to late leaf spot, rust and PBN diseases. Resistant to early season drought,	Moderately resistant to late leaf spot and rust diseases. Moderately resistant to leaf miner

		high harvest index (34.6%)	
Growth habit	Bunch	Bunch	Semi-spreading
Leaf colour	Dark green	Light green	Dark green
Seed colour	Red testa	Light Rose	Rose

FIELD PREPARATION

Plough with tractor using a disc followed by harrow, once or twice with iron plough or 3 - 4 times with country plough till all the clods are broken and a fine tilth is obtained.

Chiseling for soils with hard pan: Chisel the soils having hard pan formation at shallow depth with chisel plough first at 0.5 m interval in one direction and then in the direction perpendicular to the previous one, once in three years. Apply 12.5 t/ha FYM or composted coir pith besides chiseling.

Amendments for soil surface crusting: a) to tide over the surface crusting, apply lime @ 2 t/ha along with FYM or composted coir pith @ 12.5 t/ha. b) When coir pith at 12.5 t/ha is converted into compost by inoculating with *Pleurotus* and applied, it serves as a good source of nutrient.

APPLICATION OF FERTILIZERS

Apply NPK fertilizers as per soil test recommendation. If soil test is not done, follow the blanket recommendation.

N	P	K	Sulphur sludge
25	50	75 kg/ha	60 kg/ha

N and K in three splits viz., 50 % N & K as basal + 25 % N and K at 20 DAS + 25 % N and K at 45 DAS is recommended.

FORMING BEDS

Form beds of size 10 m² to 20 m² depending upon the availability of water, slope of the land and type of soil.

Wherever tractor is engaged, bed former may be used.

Ridges and furrows may be laid at 60cm spacing between ridges and sowing taken on both sides of the ridge

Raised bed with a width of 60cm and with a furrow of 15cm on either side may be formed and sowing taken on the raised bed Form beds of size 10 m² to 20 m²

POLYTHENE FILM MULCHING

Broad beds and furrows method of groundnut cultivation is a proven technology from ICRISAT. Considering the favourable environment in the Broad beds and furrows system for the development of groundnut pods, with a little modification in the size, beds are to be formed for the polyethylene film mulched groundnut. Make the beds at a width of 60 cm, leaving 15 cm on the either side for the furrows. In a plot size of 4.5 m x 6.0 m, five beds can be made. After the formation of the bed and fertilizer application, spread black polythene sheet (90 cm width) over the soil surface. The edges of the polyethylene can be sheet Seven micron polythene film sheet @50 kg/ha is required. Holes can be made at required spacing of 30 x10 cm before spreading of the sheets. The seed requirement is similar to normal groundnut cultivation



Polyethylene film mulch for irrigated groundnut

APPLICATION OF MICRONUTRIENTS

Apply TNAU MN mixture @ 12.5 kg /ha as Enriched FYM . (Prepare enriched FYM at 1:10 ratio of MN mixture & FYM ; mix at friable moisture & incubate for one month in shade).

Broadcast evenly on the soil surface immediately after sowing. Do not incorporate the micronutrient mixture to the soil.

To increase flower retention, pod filling and to induce drought tolerance apart from yield improvement, 2 sprays of groundnut rich @ 5.0 kg/ha (for each spray) at 35 DAS (50 per cent flowering) and 45 DAS (Pod developing stage) in 500 litres of water is recommended.

NUTRITIONAL DISORDER

Zinc deficiency:

Apply 25 kg ZnSO₄/ha as basal. If soil analysis shows less than 1.3 ppm of zinc, soil application of 25 kg ZnSO₄ is recommended.

Reduce ZnSO₄ application from 25.0 kg ha⁻¹ to 12.5 kg ha⁻¹ if FYM is applied @ 12.5 t ha⁻¹.

For the standing crop, less than 39.4 ppm of zinc in leaves, foliar spray of 0.5% ZnSO₄ is recommended.

Iron deficiency : spray 1% FeSO₄ on 30, 40 and 50 days after sowing.

Boron deficiency: Apply Borax 10 kg + Gypsum 200 kg/ha at 45th day after sowing.

SEED RATE

Use 125 kg/ha of kernels. Increase the seed rate by 15% in the case of bold seeded varieties.

SPACING

Adopt a spacing of 30 cm between rows and 10 cm between plants. Wherever groundnut ring mosaic (bud necrosis) is prevalent, adopt a spacing of 15cm x 15 cm.

SEED TREATMENT

Treat the seeds with *Trichoderma viride* @ 4 g/kg seed or *Pseudomonas fluorescens* @ 10 g/kg seed. Biocontrol agents are compatible with biofertilizers. First treat the seeds with biocontrol agents and then with *Rhizobium*. Fungicides and biocontrol agents are incompatible.

Treatment with *Trichoderma* can be done just before sowing. SUCH SEEDS SHOULD NOT BE TREATED WITH FUNGICIDES. (or)

Treat the seeds with Thiram or Mancozeb @ 4 g/kg of seed or Carboxin or Carbendazim at 2 g/kg of seed.

Treat the seeds with 3 packets (600 g)/ha of Rhizobial culture TNAU14 developed at TNAU using rice kanji as binder. If the seed treatment is not carried out, apply 10 packets/ha (2000 g) with 25 kg of FYM and 25 kg of soil before sowing.

Seed treatment will protect the young seedlings from root-rot and collar rot infection.

SOWING

Dibble the seeds at 4 cm depth along with fertilizer.

WEED MANAGEMENT

Pre-sowing: Fluchloralin at 2.0 l/ha soil applied and incorporated followed by light irrigation.

Pre-emergence: Fluchloralin 2.0 l/ha or Pendimethalin @ 3.3l/ha applied on third day after sowing through flat fan nozzle with 500 l of water/ha followed by irrigation. After 35 - 40 days one hand weeding may be given.

Spray Imazethapyr @ 750 ml/ha at 20-30 days after sowing based on weed density as post emergence spray

If no herbicide is applied two hand hoeing and weeding are given on 20th and 40th day after sowing.

Apply, PE Oxyfluorfen @ 200 g/ha on 3rd DAS and followed by one hand weeding on 40-45 DAS

Apply, PE Oxadiazon @ 0.8 kg ha⁻¹ followed by one earthing up using hoes (or) working star type weeder

Apply, PE Metalachlor @ 1.0 kg ha⁻¹ followed by one hand weeding on 40 DAS.

EARTHING UP:

Accomplish earthing up during second hand weeding/late hand weeding (in erbicide application).

It is an important operation in groundnut. Earthing up is to be done within 40-45 days after sowing as it helps for the penetration of pegs in the soil and also facilitates for increased pod development.

NOTE:

Earthing up provides medium for the peg development

Use the improved hoe with long handle which can be worked more efficiently in a standing position.

Do not disturb the soil after 45th day of sowing as it will affect pod formation adversely.

APPLICATION OF CALCIUM SULPHATE (GYPSUM)

Apply gypsum @ 400 kg/ha by the side of the plants on the 40th to 45th day of sowing. Apply gypsum, hoe and incorporate in the soil and then earth up.

Avoid gypsum in calciferous soils.

Gypsum is effective in soils deficient in calcium and sulphur.

NOTE: Application of gypsum encourages pod formation and better filling up of the pods.

Application of gypsum at the rate of 50 % basal both in rainfed and irrigated condition reduces Khadhasty malady and pod scab nematode

Combined nutrient spray

Pod filling is a major problem especially in the bold seed varieties. To improve pod filling spraying of nutrient solution is to be given. This can be prepared by soaking DAP 2.5 kg, Ammonium sulphate 1 kg and borax 0.5 kg in 37 lit of water overnight. The next day morning it can be filtered and about 32 litre of mixture can be obtained and it may be diluted with 468 lit of water so as to made up to 500 litre to spray for one ha. Plano fix at the rate of 350 ml. can also be mixed while spraying. This can be sprayed on 25th and 35th day after sowing or Spray TNAU Groundnut rich @ 5.5 kg/ha for 2 sprays at 35 (50 per cent flowering) and 45 DAS Pod developing stage).

WATER MANAGEMENT

Schedule the irrigation at 0.40 and 0.60 IW/CPE ratio during vegetative and reproductive phases respectively.

Regulate irrigation according to the following growth phase of the crop.

Pre-flowering phase : 1 to 25 days

Flowering phase : 26 to 60 days

Maturity phase : 61 to 105 days

Regulate irrigation based on physiological growth phases. Pegging, flowering and pod development phases are critical for irrigation during which period adequate soil moisture is essential. Apply irrigation as follows:

Sowing or pre-sowing

Life irrigation, 4 - 5 days after sowing if sowing irrigation given to break the surface crust.

20 days after sowing

At flowering give two irrigations

At pegging stage give one or two irrigation

In pod development stage, 2 - 3 irrigations depending on the soil type

Note: Spraying 0.5% Potassium chloride during flowering and pod development stages will aid to mitigate the ill effects of water stress. Sprinkler irrigation will save water to the tune of about 30%. Borderstrip irrigation is recommended in command areas in light textured soils. Composted coir pith increases moisture availability and better drainage in heavy textured soil.

HARVESTING

Observe the crop, considering its average duration. Drying and falling of older leaves and yellowing of the top leaves indicate maturity.

Pull out a few plants at random and shell the pods. If the inner shell is brownish black and not white, then the crop has matured.

Irrigate prior to harvest, if the soil is dry, as this will facilitate easy harvesting. If there is enough moisture in the soil, there is no need for irrigation for harvesting.

If water is not available for irrigating the field prior to harvest, work a mould board plough or work a country plough, so that the plants are uprooted. Engage labour to search pods left out in the soil, if necessary.

NOTE: Do not keep the pulled out plants in heaps when they are wet, especially the bunch varieties, as the pods will start sprouting.