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Technology for **GROUNDNUT**



Production in Goa



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INTRODUCTION

Out of the nine oilseeds crops grown in our country, Groundnut is the only crop cultivated in Goa during both the seasons. The major area under this remunerative crop [1437 ha] however is during the Rabi season. Although this crop has limited acreage at present, there is good scope for bringing more area under this crop since the per unit productivity ranks third in the country [1.9 t/ha] as against the National average productivity of [1.0 t/ha].

WHY GROW GROUNDNUTS ?

Cultivation of any crop must accrue maximum benefits to the grower not only in terms of the returns but also other indirect benefits associated with that crop. Groundnut being a leguminous crop, has the following advantages over other crops including the horticultural crops.

- ◆ Being leguminous, groundnut has the ability to fix atmospheric nitrogen biologically into the soil which enriches the soil and this benefits the succeeding crop.
- ◆ It is one crop which does not require irrigation and can be cultivated on the residual soil moisture conditions.
- ◆ It does not need elaborate management practices.
- ◆ It can provide gainful employment during the lean season.
- ◆ Unlike the vegetables and fruits, which are highly perishable items, groundnuts can be stored for a long period of time and sold when prices are high.
- ◆ It provides a very nutritive bio-mass in form of green fodder which can be fed to cattle
- ◆ Groundnut crop is considered not only as an oilseed crop but also as a food crop because of varieties of high protein are available

LAND PREPARATION :

Groundnut crop is mostly grown on the residual moisture conditions. Therefore it is necessary that the soil moisture present in the soil is not exposed to hot sun. However, the land should be cross ploughed with country plough instead of a tractor. Break the clods and remove paddy stubbles. The depth of ploughing must be about 20-30cm.

VARIETIES :

Seed accounts for about 40-45% of the total cultivation cost. Therefore due care should be taken to select the most

ideal variety to suit the local climate, geographical location and having high yield potential. The ICAR has so far evaluated a number of short duration, drought tolerant and high yielding varieties suited for coastal region. Varieties like Dh-3-30, Dh-40, K-134 are recommended for this state in addition to JL-24. For sowing one hectare area 200 kg of pods should be used to get optimum plant population. Use Groundnut decorticator for seed shelling to save time and labour.

SEED TREATMENT :

Untreated seeds if used for sowing, leads to poor germination due to the incidence of seed borne diseases like collar rot, seedling rot, root rot which results in poor plant population and low yields.

Treat the seeds with fungicides like 'Captan' or 'Thiram' @ 3gm /kg of seed. For treating the seeds required for sowing one hectare, use 450gm of fungicide or the seeds can also be treated with biological fungicide "*Trichoderma viride*" [Ecofit] in following manner.

For dry seed use 4 gms powder/ kg seed.

For slurry seed treatment, take small quantity of water @ 10 ml/kg seed and mix 4 gms Ecofit and give thorough coating on seeds and air dry before sowing.

For soil application, mix 1 kg Ecofit with 25 kg farm yard manure and broadcast over one acre area. Optimum soil moisture at the time of application ensures best results.

One day before sowing the seed, treat the seed with Bradyrhizobium culture @ 300 gm /40 kg seed to sow one acre. For better results use rice glue as a carrier.

SOWING TIME :

The time of sowing assumes great importance in case of rabi groundnuts since the crop is taken on residual moisture from the soil. The most ideal time under Goa conditions is between November last week to first week of January. If sowing is delayed beyond this, there is drastic effect on the germination as well as overall yield.

MANURING :

The nutrition of groundnut crop specially the Phosphorous and micronutrients like Calcium, Magnesium and Sulphur has influence on the pegging, pod development and filling as well as oil content.

During ploughing, apply 25 tonnes of well rotted FYM / compost /ha. Similarly apply 15-20 kg Urea, 250-300kg Single super phosphate and 40-50kg potash/ha. Once in three crop-

ping seasons, apply 500kg Gypsum/ha as basal dose. In micronutrient deficient soils foliar sprays, containing desirable micronutrient helps to increase yields.

SOWING :

For ensuring optimum plant population, sowing is done by seed drills. However, for sowing with country plough, care should be taken to see that the treated seeds are sown at a spacing of 25cm between rows and 10cm between plants in straight lines. The ideal sowing would be one in which the crop forms a carpet like canopy without any vacant spots. If gaps are seen they could be filled by fresh sowing within ten days time. Optimum plant population in the field is a key to high yields. Seed treatment also plays a vital role in ensuring uniform germination and crop stand.

INTERCULTURE :

Give two hoeings when the crop is about 15-20 days old. In areas where it is possible to do earthing up operation, apply gypsum before earthing up. This should be done before the initiation of flowering which takes place after 45-50 days of sowing. Do not disturb the plants after pegging starts.

WEED MANAGEMENT :

Weeds are a problem in certain soils which are to be checked in time. In sandy soils however, it is not a major problem. Give two hoeings followed by hand weeding the crop 15-20 days after sowing removes most of the weeds. In serious cases spraying with chemical weedicide like Alachlor @ 1.5 kg a.i./ha or Nitrofen @ 2.5 kg a.i./ha or Pendimethalin @ 1.5 kga.i./ha dissolved in 600 litres of water as pre-emergence spray a day after sowing kills most of the weeds. Do not trample the soil which is sprayed. This can be achieved by walking backwards.

PLANT PROTECTION :

Groundnut crop is infested with sucking type of insects like aphids, leaf minor, thrips, leaf eating caterpillars, leaf webber in the initial and active growth stages. In the later stages, the crop may be attacked by Groundnut earwig or pod borer which punctures the developing pods causing heavy damage.

For the control of sap sucking and foliar insects, spray the crop with Endosulphan [0.05%], Dichlorvos [0.05%], Phosphamidon [0.03%], Monocrotophos [0.05%] once or twice depending on the severity after 20-25 days of sowing.

The major diseases of groundnut in Goa are the seed borne diseases which can be controlled by adequate seed treatment be-

fore sowing. The foliar disease called 'Tikka' or leaf spots is a serious problem in the advanced stage at the time of pegging to pod development. This can be effectively controlled by spraying the crop twice once at 25-30 days of sowing and again at 65-70 days with Carbendazim [Bavistin] @ 1gm/litre water.

For the control of earwig or pod borer, 0.07 % drenching with Endosulphan at the time of earthing-up or after 60-70 days of sowing or soil application of Lindane dust @ 50kg/ha is helpful. In endemic or severe cases, it is advisable to apply Phorate or Carbofuran granules @ 1kg a.i. at the time of land preparation since these are persistent insecticides.

IRRIGATION :

The crop is mostly grown on the residual moisture without any supplementary irrigation. However, it responds to two or three irrigations given at an interval of 12-15 days starting from 75 days of sowing. The results from trials show an increase of 35-40% in pod yield corresponding to extra pod yield of 300-400 kg/ha. If the crop is grown in summer [January sowing] irrigations at an interval of 12-15 days would be sufficient.

HARVESTING AND YIELD :

The crop must be harvested at the proper time. This will depend on the variety grown and its duration. Normally, the varieties recommended mature in 115-120 days. The symptoms like yellowing and drying of lower leaves, and reddish colour of the kernels after the pods are broken are the visual indicators to decide upon harvesting. The crop yield between 2.3 to 2.5t/ha if proper management practices are followed. Under supplementary irrigation it can yield about 2.8 t/ha. or more.

DRYING AND STORAGE :

Due to high rainfall and humidity in Goa, proper technique of drying and storing groundnuts is to be adopted. Make bundles of 1.5m diameter of harvested plants with pods intact. Keep another heap over it in inverted fashion with pods of both heaps touching together in sun during day time and in the evenings remove the top heap. Repeat this process for three days and two nights. This will help in gradual drying and reduction of moisture level in pods to around 9%. Do not separate the pods from plants immediately after harvest. Thorough drying can be judged by rattling sound when the pods are shaken. When the kernel is pressed between two fingers, it easily splits into two cotyledons. The seed coat comes off easily when rubbed. On the fourth day, separate the pods and sun dry once to store.

STORAGE :

Use HDP bags for storing. Put 250 gm of calcium chloride in a muslin cloth placed in a perforated plastic jar, without touching the bottom of the jar vertically in the Centre of the storage bag. Store in a moisture proof room. The seed viability would be intact for more than 9-10 months and the seed can be used for sowing in the next season.

ECONOMICS :

As Stated earlier, Groundnut is a remunerative crop which can bring in farm income within a period of 4-5 months to the grower. There is ready market for groundnut for oil extraction. However, if proper management practices are followed the yield levels can even cross 3 t/ha.

The cost: Benefit analysis based on the prevailing labour costs have been roughly worked out for guidance. The cultivation costs can be further reduced by engaging family labour and by use of labour saving implements

* Cost Benefit analysis of Groundnut cultivation [ha] in Goa.

Particulars	Quantity (kg)	Rate (Rs)	Amount (Rs)
Dry pods	2300	15.00	34,500.00
Fodder)	3500	300/t	1050.00
Gross Income {A}			35,550.00
Total Expenditure {B}			14,671.00
Net Income [A - B]			20,879.00
C: B Ratio			1: 2.43.
Cost of producing kg of Groundnut			6.30

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