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Cultivation of Groundnut "The Poor Man's Almond"

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Introduction:

Groundnut is (*Arachis hypogaea* L.), is most important oilseed crop. It ranked third among all other oilseed crops in the world. Oil content in its seeds ranged from 44-50% that can vary from variety to variety agronomic cultural practices. Groundnut oil is utilized in making of soap, cosmetics, lubricants, soap, olein, stearin, and their salts. Groundnut kernels are eaten as raw or roasted or sweetened. These kernels are rich in proteins 26% and vitamin A and B. Groundnut cell is used for manufacturing of coarse board, cork substitutes and also used as fuel. It is also used as a rotation crop. These are known by many other local names such as earthnuts, ground nuts, goober peas, monkey nuts, pygmy nuts and peanuts. Despite its name and appearance, the peanut is not a nut, but rather a legume.

Groundnut is a legume belongs to bean family and ideal for cultivation in tropical regions, grown mostly under rain-fed conditions. In India, Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu are major groundnut growing states. In India, it is available throughout the year.

Fig. 1: Groundnut crop

Climate:

The crop can be grown successfully in places receiving a minimum rainfall of 500mm and a maximum rainfall of 1,250 mm. The rainfall should be distributed well during the flowering and pegging of the crop. The groundnut cannot stand frost, long and severe drought or water stagnation

Soil for growing Groundnuts:

Well-drained sandy loam or sandy clay loam soil is suitable for groundnut cultivation. Deep well-drained soils with a pH of 6.5-7.0 and high fertility are ideal for groundnut. Optimum soil temperature for good

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germination of groundnut is 30°C. The low temperature at sowing delays germination and increases seed and seedling diseases. A soil test must be done before starting groundnut farming.

Crop rotation:

Crop rotation is very important in groundnut farming, this helps in efficient nutrient utilization and reduces soil-borne diseases and nematodes. It also helps to reduce the incidence of weeds. Maize, sorghum, pearl millet or small grain crops can be grown following groundnut. To reduce the incidence of soil-borne diseases it is recommended not to grow groundnut after groundnut, or tobacco, or cotton.

Varieties:

Bunch type: 'Junagadh-II', 'TMV-2', 'Pol-2', 'AK 12-24', 'Kopergaon-3', 'KG-61-240' (Jyothi)

Semi-spreading type: 'TMV-6', 'TMV-8','Kopergaon-1', 'C-501'

Spreading type: 'Punjab-I', 'GAUG-10','Kadiri-71.1', TMV-1', 'TMV-3', 'S-230', 'Karad4-11'

Cultivation:

For a kharif crop, with the onset of rainsin May-June, the field is given two ploughing and the soil is pulverized well to obtain a good tilth. Harrows or tiller can be used for cultivation. If a field is infested with white grubs, chemicals, such as Heptachlor or Chlordane, are drilled at the rate of 25kgper ha. before final harrowing. For the irrigated crop, beds of convenient size may be made, depending upon the topography of the land, the nature of the irrigation source and the mode of lifting water

Land preparation:

- ✓ Prepare the land till fine tilth is attained.
- ✓ It facilitates root growth, peg penetration and pod development.
- ✓ Weeds and clods are to be avoided.

The seed treatment procedure of groundnut:

To control pathogens causing seed and seedling diseases, it is necessary to coat the seed before sowing with either Thiram® (a.i. 5 0 % @ 3 g kg -1 seed) or Bavistin® (a.i. 5 0 % @ 2 g kg’ 1 seed). Seed may be inoculated at the time of sowing by field inoculation to ensure good nodulation where the soil has been found to contain few rhizobia.

The seed rate and spacing of groundnut:

The seed rate depends on the variety (Spanish, Valencia, or Virginia), runner or bunch type, the seed mass, and germination rate of the seed-lot. The recommended population for bunch varieties is 330 000 plants ha -1 (about one plant per 30 x 10 cm). In case of semi-spreading and spreading varieties the recommended population is 250 000 plants ha -1 (one plant per 40 x 10cm).

Sowing:

Groundnut is raised mostly as a rainfed *kharif* crop, being sown from May to June, depending on the monsoon rains. It is sown as late as August or early September. As an irrigated crop it is grown to limited extent between January and March and between in May and July. Well-filled kernels should be selected and treated with 5g of Thiram or 3g of Captan per kg of kernels. The quantity of well-developed seeds required per hectare about 110 kg for semi-spreading and spreading varieties and 120kg for the bunch varieties. The *kharif* crop is sown with a seed drill or with a suitable planter at a depth of 8-10 cm. for semi-spreading and spreading varieties, the spacing between at the adjacent rows varies form30-60cm and within the row from 10-15cm. For the rainfed bunch groundnut the inter-row spacing vary between 20 and 30cm and the intra-row spacing between 10 and 20cm.

Fertilizer:

Fertilizer recommended for rainfed crop is 6.25 tonnes farmyard manure and 10-25kg nitrogen, 20-40kg phosphorus and 20-40kg potash per hectare. For irrigated crop 12.5 tonnes farmyard manure and 20-40kg nitrogen, 40-90kg phosphorus and 20-40kg potash per hectare. The application of nitrogen in two equal splits doses, one before sowing and the other 30 days after sowing. The application of a culture of Rhizobium as seed treatment is beneficial in increasing nodulation and nitrogen fixation. The application of gypsum at500kg per ha at the pegging stage will enhance pod formation.

Irrigation:

The kharif crop iscaught in a long spell of drought, especially at the pod-formation stage, supplemental irrigation is given. For the irrigated groundnut, the frequency of irrigation depends on the soil texture, and the interval between irrigation ranges from 8-12 days. Thepeg-formation stage is critical

Intercultural operations:

For controlling weeds, and also to keep the soil in a friable condition, the crop should generally receive a hand-weeding and one or two hoeing's, with bullock-drawn implements, the first about three weeks after sowing and the second and the third about a fortnight and a month later. No intercultural operations should be done after the pegs have commenced going underground. Earthing up can be done in the case of bunch and semi-spreading types for facilitate the maximum penetration of the pegs into the soil. Weeds can also be controlled effectively with Lasso or Tok-E-25 weedicide at the rate of 5 litres in 500 litres of water per hectare as a pre-emergence soil spray within two days of sowing groundnut.

Harvesting:

Premature harvesting of groundnut pods lowers the yield, oil percentage, and quality of seeds. Delay in harvesting after physiological maturity can result in increased Aspergillus flavus infection, and aflatoxin contamination in pods/seeds, and many pods may be left in the soil due to a weakening of pegs. The Spanish bunch varieties (non-dormant types) start germinating if harvesting is delayed. Therefore, it is important to harvest at optimum maturity.

There are three ways of harvesting in Groundnuts

- ✓ Apply sprinkler irrigation for an hour and manually pull the plants.
- ✓ Provide light surface irrigation 2–3 days before harvest and use a blade harrow that cuts the plant roots 1.2 – 1.5 cm below the soil surface. Then manually pull the plants.
- ✓ When irrigation water is scarce, use a plow or tractor-driven digger to loosen the soil. Then manually remove the plants.

Note: Harvested plants should be stacked in the field for a few days for air and sun drying (on bright sunny days) before stripping the pods. Thereafter, pods are continuously dried to reach a moisture content of 6 – 6 % to avoid the development of aflatoxin caused by yellow mold (*Aspergillus flavus*). On cloudy days, pods should be removed and immediately placed in the air drier at 27-38°C for 2 days or until the pods dry to a constant mass (6 – 8 % moisture).

Storage: After cleaning and grading, store the dry pods in gunny bags and stack them up to 10 bags high in separated stacks so that air freely circulates among them. The bags should be piled on wooden planks to avoid damage from dampness. Dusting the bags with 5% Lindane® will protect the pods from many storage pests.

Marketing of Groundnut: Marketing is easy where you can sell to local Groundnut mills or Agents or Government markets.

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