

Scientific Cultivation of Ginger (*Zingiber officinalis*)

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Ginger is commercially grown in almost all the states of north eastern region. Meghalaya is second largest producer of ginger in the country after Kerela. Ginger is the main cash crop for farmers of the region. The crop is so important that many farmers are solely dependant on ginger. It is used in culinary, flavourant in beverages, confectionery, pickles and pharmaceuticals, but in this region, it is mainly used for fresh consumption. It is also sold outside the region in fresh' form.



Cultivars

There are many local cultivars available in the region but the most suitable high yielding cultivars for the region are given below:

- ✚ **Nadia-** It is high yielding variety, produces green ginger about 24-25 t/ha with drymatter recovery of 22.40 per cent. It has 4.2 per cent crude fibre content. This variety is well adapted to this region. It is suitable for both fresh and dry ginger.
- ✚ **China-**It is an exotic high yielding variety and well adapted to this region. It has 6.0% crude fibre and 15 per cent dry ginger recovery. It yields around 20 t/ha.
- ✚ **Maran-** It is a popular variety of Assam and least affected by *Phythium aphanidermatum*. The percentage of dry ginger recovery is 22% and crude fibre is about 6.1%. it is Suitable for oil and oleoresin extraction.
- ✚ **Vareda-** This variety has been developd recently by IISR, Calicut. The variety has very low fibre content (around3.8%) and high yield potential. The rhizomes are large size, bold and attractive. It gives 20-22 t/ha fresh ginger yield.

Climate and Soil

Ginger is grown as rainfed crop. It grows well in warm and humid climate. It is cultivated up to 1500 m above mean sea level. However, an optimum elevation for its successful cultivation is 300-900 m. A rainfall of 1500-3000 mm, well distributed in 8-10 months is ideal.

Ginger is cultivated on a wide range of soils such as sandy loams or clay loams. Virgin forest soils particularly after deforestation is found ideal. The most favorable soil pH is 6.0-6.5.

Field Preparation

The land should be ploughed 4-5 times to bring the soil into fine tilth. Beds of 1.5 m width, 15 cm height and 3 m length are prepared at 40 cm spacing. About 2000 beds of 3 x 1 m size are prepared in one hectare. The optimum spacing is 30 cm x 30 cm under bed system of planting. A bed of 3 m x 1 m can accommodate 40 plants.

Seed Rate

The rhizome used for seed should be true to type and free from disease. 18-20q rhizomes of 25-30 g are required for one-hectare land.

Time of Sowing

It is sown from April to May in this region. But the best time is middle of April when there is sufficient moisture in the soil.

Method of Planting

Ginger is propagated from small rhizome known as bits. Four to five cm long sprouted bits, weighing 25-30 g are separated from the mother rhizomes for sowing. Spacing of 30 cm between row and 25 cm between plants is considered ideal for ginger. Rhizomes are placed at a depth of 4-5 cm in furrows and covered with soil.

Seed Treatment

Seed treatment induces early germination and prevents seed borne pathogens and pests. Before sowing, seed rhizome should be dipped in cow urine for half an hour. Smoking seed rhizomes once or twice before storage is also beneficial. Seed rhizomes are also treated in hot water at 48 °C for 20 minutes before planting. The seed canals are treated with Dithane-M-45 @ 2 g/l of water.

Manure and Fertilizer

FYM 20 tones/ha should be applied at the time of field preparation followed by N: P: K @100:90:90kg/ha. 1/3 nitrogen and full doses of phosphorus and potassium is applied at the time of planting. 1/3 quantity of nitrogen is applied 45 days after planting and remaining of 1/3 nitrogen is applied at 90-95 days after planting.

Inter cultural Operation

- ✚ **Mulching:** Locally available mulch material like green leaves, tree leaves, dry grasses and paddy straw may be used for control of weeds.
- ✚ **Earthing up and weeding:** At least two earthing up is required for better growth and development of rhizomes. Earthing up should be done immediately after weeding and fertilizer application. Two-three manual weeding is also required for controlling the weeds.

Plant Protection

- ✚ **Leaf Spot (*Phyllosticta zingiberiy*)** - Small, spindle to oval spots appear on younger leaves. The spots later increase in size and coalesce to form large spots, which decrease the photosynthetic area on the leaf surface and finally drying of leaves take place. Application of Dithane M-45 @ 2 g/l of water is found effective to control the disease.
- ✚ **Rhizome rot/soft rot (*Pythium spp.*, *Rhizoctonia spp.*)**. The leaves of the affected plants become yellow. Water soaked appearance found at the base of pseudo stem and rotting take place at basal portion. The affected rhizomes become soft, pulpy and plant easily collapse on pressing. Drenching of soil with solution of Dithane Z - 78@ 2g/l of water at 30 days interval is effective for control of disease.
- ✚ **Shoot borer (*Conogethes punctiferalis*)**-The larvae bore into shoot and feed on the internal tissues resulting in yellowing and drying of infested shoots. The presence of bore holes on the shoots through which frass is extruded and the withered central shoot is a characteristic symptom of the pest infestation. Pruning of freshly infested shoots at fortnightly intervals during July-August and spraying Malathion (0.1 %) at monthly intervals is effective in controlling the pest infestation.
- ✚ **Rhizome scale (*Aspidiella hartii*)**- The pest feeds on plants and the rhizomes, severely infested rhizomes become shriveled, desiccated and fail to germinate. Severely infested rhizomes are to be discarded before storage of rhizomes and infested rhizomes should be treated by dipping in Quinalphoss 0.075% before storage.

Harvesting and Yield

Ginger becomes ready for harvesting after 8-9 month of sowing (in the month of December) when the leaves started yellowing and drying. A properly managed crop gives an average yield of 15-20t/ha in this region.

