PACKAGE OF PRACTICES
FOR
GINGER

ICAR

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GINGER

Ginger, *Zingiber officinale*, is an important spice crop of our country. It is said to be a native of south East Asia. Ginger of commerce is the underground stem or rhizome of the plant.

In addition to its use as a spice, ginger is also used in various medicinal and culinary preparations. It is also used as a flavouring agent and for the extraction of essential oil, gingerol.

India is the largest producer of dry ginger in the world, accounting for more than half of the total world production. Other important ginger producing countries are Taiwan, Jamaica, Sierra Leone, Australia, Mauritius, Nigeria *etc.* India produces about 39,500 tonnes of dry ginger annually from an estimated area of 39,500 ha. About 10–15% of the produce is exported mainly to Saudi Arabia and other Middle East countries.

Though ginger is cultivated in almost all the states of the country, Kerala accounts for more than 60% of the total production. Himachal Pradesh, West Bengal, Orissa, Karnataka, Tamil Nadu, Andhra Pradesh and Gujarat are the other ginger growing states.

Climate and soil

Ginger grows best in a warm and humid climate. It is cultivated from almost sea level to an altitude of about 1,500 m. The crop requires heavy and well distributed rainfall. In low or moderate rainfall areas it needs good irrigation. For the successful cultivation of the crop, a

moderate rainfall at the sowing time till the rhizomes sprout, fairly heavy and well distributed showers during the growing period and dry weather about a month before harvesting are necessary. It thrives well in a wide range of soils with good drainage, like sandy or clayey loam, red loam or lateritic loam soils. A friable loam rich in humus is ideal.

Planting material

Rhizomes are used for planting. The seed rhizomes are treated with 0.25% Ceresan wet solution for 30 minutes, drained and stored in a cool dry place or in earthern pits plastered with mud. A layer of paddy husk may be provided before storing the rhizome.

Varieties

i) For dry ginger— Maren, Wynad Mananthody, Valluvanad, Ernad or Kuruppampady.

ii) For green ginger— Rios De Janerio (preferable for extratoion of oleoresin) China, Wynad local or Tafengiya.

Varieties like Nadia, Poona, Wynad Kunnamangalam, Burdwan etc. gave higher yields at Kasaragod but it is too early to recommend these for large scale cultivation.

Preparation of land and planting

Preparation of land starts with the receipt of early summer showers. The land is to be ploughed 5 to 8 times to bring the soil to fine tilth. Beds of obout one meter width, 15 cm height and of convenient length are prepared at an interspace of 40 cm in between beds. In the case of irrigated crops ridges are formed 40 cm apart.

Early sowing with the receipt of good summer showers ensures a good yield. Seed rhizomes carefully preserved under shade are cut into pieces, each having at least one or two good buds and weighing about 15 g. The seed pieces are planted in rows 20-25 cm apart at a distance of 15-20 cm within the row and covered with soil. The seed rate per hectare is 1,800 kg.

Manuring and mulching

At the time of planting well decomposed cattle manure or compost at the rate of 25-30 tonnes per hectare is to be applied. It may either be broadcast over the beds prior to planting or applied in pits, or applied over the seed rhizomes pits before covering. Fertilisers are applied to supply 75 kg N, 50 kg P_2O_5 and 50 kg K_2O per ha. Whole of P_2O_5 and half of K_2O may be applied at the time of sowing, half of N applied 40 days after planting and the balance N and K_2O three months after planting. The beds are earthed up after each top dressing with the fertilisers.

Mulching of the beds with green leaves is an important and essential operation for ginger. Apart from being a source of organic manure, mulching prevents washing away of soil and conserves soil moisture. The first mulching is done at the time of planting with 12.5 tonnes of green leaves per ha, and a second mulching done after 40 days with 5 tonnes of green leaves per ha.

Two weedings are generally given to the crop. The first weeding is done just before the second mulching and repeated depending on the intensity of weed growth. If necessary, weeding is to be repeated for a third time.

Rotation and mixed cropping

Ginger is commonly rotated with other crops. The crops most commonly rotated with ginger in Kerala are tapioca, chillies, dry paddy and gingelly in rainfed areas and ragi, groundnut, maize and vegetables in irrigated ones. In Karnataka ginger is also cultivated mixed with ragi, red gram and castor. Ginger is also grown as an intercrop in coconut, arecanut, coffee and orange planations.

Harvesting and curing

The crop can be harvested in about eight months time, when the leaves turn yellow and start gradually drying up. The clumps are lifted carefully with a spade or digging fork and the adhering soil removed. The average yield per hectare varies with the varieties ranging from 15 to 30 tonnes.

In order to market the produce as green ginger, harvesting is done earlier, the rhizomes are thoroughly washed in water two or three times to remove the soil and dirt. Then it is sun dried for a day.

For preparing dry ginger the outer skin has to be peeled off from the rhizome. For better peeling of the outer skin the rhizomes can be cut to pieces of convenient length.

The produce is kept soaked in water overnight. The rhizomes are then rubbed well between the palms of the hand. After thoroughly cleaning it is removed from water. The outer skin is best removed with split bamboos having pointed ends. Only the outer skin is to be peeled since the essential oil of ginger remains near the skin. Then the peeled produce is washed and uniformly sun dried for a

week. In order to get rid of the last bit of the skin or any foreign matter the dry rhizomes are rubbed together. These are called the 'rough' or 'unbleached' ginger.

The yield of dry ginger is 16-25% of the green ginger depending on the variety.

Seed ginger

In order to get good germination seed rhizomes are to be stored properly in pits under shade. The rhizomes harvested during December-January have to be preserved for about 4 months before planting in April-May. For seed material, big, plumpy rhizomes free from diseases are selected immediately after harvest; these rhizomes are first treated with 0.25% solution of Ceresan wet (250 g in 100 litres of water) for 30 minutes and then placed under shade till the solution on the surface is dried. Treating with ceresan wet is a prophylactic measure against soft rot disease. If the seed rhizomes are infested with rhizome scales, it is advisable to treat the same with 0.05% malathion/dimethoate. The seed rhziomes are put loosely in pits of convenient si e to a height of 10-15 cm. The pit is covered with a wooden plank leaving a gap of about 10 cm. between the seed and plank. For aeration a small hole is also provided on plank. The remaining surface is plastered with mud. In some areas the rhizomes are loosely heapad over a layer of sand or paddy husk and covered with dry leaves.

Plant protection

Pests:

Shoot borer (*Dichocrocis punctiferalis* Guen): The pest causes damage to the pseudostems and rhizomes. The pest

incidence can be detected by the presence of holes on the pseudostem, the frass thrown out of the holes and "dead hearts." The pest can be controlled by spraying 0.05% dimethoate/phosphamidon or by soil application of granular insecticides.

Leal Roller (*Udaspes folus* C.): The caterpillar remains feeding in leaf folds and pupates inside the same. The adult is an active butterfly with brownish black wings having white spots. The pest can be controlled by spraying 0.10% carbaryl or 0.05% dimethoate/phosphamidon.

Scales, *Aspidiotus hariti* C., cause damage to ginger rhi omes under field and storage conditions. They suck up sap from the rhizomes as a result of which the rhizomes shrivel and dry up. This pest can be controlled by dipping the seed rhizomes in 0.05% malathion/dimethoate at the time of planting.

Diseases

Soft rot (*Pythium* sp.): This is the most destructive disease of the ginger. The symptoms include slight paleness of leaves particularly at the apex; the yellowing gradually spreads downwards resulting in withering and drying of leaves. The collar region of the pseudostem becomes water soaked and soft resulting in eventual death of the plant. Lack of drainage and continued dampness of the field predispose the plants to infection. The disease spreads through seed rhizomes and soil. Control measures include provision of adequate drainage in the field. selection of healthy seed rhizomes from disease-free arees, treating tfie seed rhizoms with 0.25% Ceresan wet for 30 minutes prior to storing and

drenching the beds with 0.01% Ceresan wet or Cheshunt compound or captafol 0.1%.

Leaf spot (*Phyllosticta zingiberi*): The disease appears as small oval to elongated spots on the leaves. The mature spots are white and paperly at the centre with a dark brown margin surrounded by yellow halo. The disease incidence is severe when ginger is grown under exposed conditions. It can be controlled by spraying with 1% Bordeaux mixture or 0.2% Thiram.

Ernad Mazen - 420 gm
Wynad Local — 230
Uttar Pradesh - 100
Jamaica — 370
Bajpai — 500
Vallivanad - 200
Burdwan - 450
China — 300
Bahrein — 440

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