भाकृअनुप
ICAR

ORGANIC PRODUCTION OF TURMERIC

भाकृअनुप-कृप
ICAR-RC-NEH

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Organic production of Turmeric

Turmeric (*Curcuma longa*) is used as spice, dye and in cosmetic industry and religious ceremonies. It is cultivated successfully in NEH states.

Climate and soil- Turmeric prefers a warm, humid climate with a rainfall of 1,500 mm and temperature of 20^0-30^0C.It thrives well up to 1,200m above mean sea level. Well-drained sandy or clayey loam or red loamy soils having slight acidic pH are ideal for its cultivation.

Varieties - There are many improved cultivars available in the country like BSR 1, Co- 1, IISR Prabha, IISR Prathiba, Kanti, Krishna, Rajendra Sonia, Ranga, Rasmi, Roma, Sobha, Sudarsana, Sugandham, Suguna, Suroma, Suvarna. Lakadong, Megha-1 (a selection from Local cv. Lakadong of Meghalaya)

Propagation and planting - Whole or split mother rhizome or finger rhizomes are used for planting. Seed @ 12-15q /ha is optimum. Each planting unit consists of bits of 20-25g each. The seed rhizomes are treated with *Tricoderma harzianum*for 30 minutes before storage as well as before planting time. Turmeric can be planted in April – May.

It is either planted on raised beds of 1 m width and convenient length with

15cm height or on ridges and furrows or in flat system. The spacing is kept 30cm x 15cm or 30cm x 20cm (in beds), 40-60cm x 25cm (on ridges and in furrows) and 50cm x 15cm (in flat system). Repeated cropping in the same area should be avoided.

Manuring - A basal dose of farmyard manures @ 5-6 tones /ha or 5 tonnes of Vermicompost may be incorporated at the time of land preparation. In addition application of 2 tonnes/ha is desirable

The crop is mulched immediately after planting with green leaves @ 10-12 tonnes /ha. It may be repeated for a second time with 5.0 tonnes/ha at 50th days after planting

Aftercare-first earthing up should be given 30days after planting and next after 50-60 days. It can not withstand prolonged water logging and also not tolerate heavy shade.

Intercropping – Turmeric comes up well under sparse shade also. It can be grown as an intercrop in coconut gardens like ginger or as mixed crop with red gram, chilli, vegetables, maize, and ragi.

Turmeric can be grown as a rain-fed crop depending on the localities.

Harvesting and post harvest management- Turmeric takes 7-9 months for harvesting. Drying of aerial portion indicates maturity. On an average, a yield of 20-25 tones /ha of fresh rhizomes may be obtained. The harvested rhizomes are washed well to remove the soil.

Nematodes

Wherever nematode problems are common, use only healthy, nematode-free planting material. Increasing the organic content of the soil also checks the rapid multiplication of nematodes

Plant protection

Leaf blotch The disease is caused by Taphrina maculans.

Symptoms

It appears as small, oval, rectangular or irregular brown spots on either side of the leaves which soon become dirty yellow or dark brown. The leaves also turn yellow.

In severe cases the plants present a scorched appearance and the rhizome yield is reduced.

Management:

Use of resistant varieties like, Chiana, CLL 324, Amalapuram, CLL 326, Alleppey among C. longa group and Ca 68 & Ca 67, Kasthuri among C. aromatic group are found to be resistant.. In Assam, turmeric cultivars like Ca 69 and Shillong are resistant to leaf spot. 1. Use of healthy planting materials is the most important method to control the disease. 2. Destruction of diseased plant as soon as noticed in the field. 3. Spraying of Bordeaux mixture (1%) have been found effective in reducing the spread to some extent.

Rhizome and Root Rot:

Causal Organism:

Turmeric is attacked by more than one species of *Pythium* including *P. aphanidermatum* and *P. graminicolum.*

Post harvest management

The fingers and mother rhizomes are separated. The finger rhizomes are cooked in boiling water for 1 hour and sun dried on bamboo mat for 10-15day. For boiling turmeric usually copper galvanized / iron or earthen vessels are used. It takes 40-60 minutes of boiling to reach the correct stage (soft). The cleaned fingers (50 kg) are taken in a perforated trough of convenient size made of GI or MS sheet with extended parallel handle. Fingers are then immersed in a paddle. The hot water is poured in to a pan so as to immerse the fingers. It is boiled till they become soft. Mother and finger rhizomes are cured.

Powder is added to the drum either as powder or as emulsion for giving bright colour to rhizomes. Cured turmeric is sorted as finger, round, split, and marked under its varietal / trade name such as Alleppey, Erode; Duggirala, Nizamabad, and Rajapuri, Value-added products of turmeric are also made.

The dry recovery varies from 15-30% depending on variety, location, and cultural practices. The dried turmeric is subjected to polishing either manually by rubbing it on concrete flooring or mechanically in power drums.

Symptoms : The leaves of affected plants exhibit gradual drying along the margins. This ultimately results in complete drying of all the leaves. The basal portion of the shoot appears watery and soft. The root system is very much reduced and its tissues are also affected. In advanced stages, the infection spreads to rhizomes which decompose and turn into a decaying mass of tissues. The development of rhizomes is poor. The disease may appear in isolated plants or may involve several adjacent clumps

Root not nematodes

leaf blotch in turmeric

resulting in appearance of diseased patches in the field.

Control Measures : Use of healthy planting materials is the most important method to control the disease. Uprooting and burning of diseased plant as soon as noticed in the field. Water-logging situation should be avoided. In Assam, turmeric cultivars like Ca 69 and Shillong are resistant to leaf spot caused by P. myriotylum

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Published under Biotechnology led Organic Farming in North East Hill Region, sponsored by DBT, New Delhi,

Designed & Printed by ***print21***, R. G. Baruah Road, Ambikagiri Nagar, Guwahati-24