



Single Node Cutting Technology in Turmeric

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Turmeric (*Curcuma longa* L.) is a herbaceous perennial plant belonging to the family Zingiberaceae. Turmeric originated in South-East Asia and one of the important spice crop of the tropics. India is the largest producer, consumer and exporter of turmeric in the world. India exports turmeric to USA, U.K, Russia, Canada, Italy, Netherlands, Singapore, Saudi Arabia, UAE and Germany in the form of turmeric powder and as whole rhizome. India being the world's largest producer of turmeric, gains importance for its oleoresin and curcumin, having medicinal value and ample export opportunity has been created in World Trade Centre. In India, Andhra Pradesh, Orissa and Tamil Nadu are the important turmeric growing states. Turmeric is very much identified with human civilization and religion and is used both in developed and developing countries in various forms. It contains appreciable quantities of proteins (6.3%), lipids (5.1%), carbohydrates (69.4%) and fibre (2.6%) and also rich in minerals like phosphorus, calcium, iron and vitamin A. Turmeric has a lot of medicinal properties and is used for the treatment of sprains and inflammatory conditions since long time. In Indian pharmaceuticals, it is valued for the anti-cancerous, anti-inflammatory and antiseptic properties. Turmeric is cultivated for their underground rhizome, used as spice, condiment, dye stuff in drug and cosmetic industry. It forms an important adjuvant in Indian culinary as it tends colour and aromatic flavour to various dishes. It is mainly used as condiment in the preparation of pickles and curries and as a colouring agent in textile, food and confectionary industries. The turmeric rhizome contains a variety of pigments among which 'curcumin' is the major pigment responsible for colour and it varies from 3.5 to 9.0 per cent in different varieties.

Growing turmeric in coconut orchard proves profitable without hampering the performance of the main crop and the natural resources *i.e.*, soil, water, air space and solar radiation can be better utilized by raising the turmeric as intercrop. Considering these facts, the investigation was undertaken to optimize the seed rhizome size and plant spacing for obtaining higher yield in turmeric. In turmeric, planting material requirement is very high and it involves 40 per cent of its cost of the total cost of cultivation. Whole or split rhizomes with healthy buds is used for planting. Though transplanting in turmeric is not conventional but it is found profitable. A transplanting technique in turmeric by using single bud sprouts has been standardized to produce good quality planting material with reduced cost. The technique involves raising transplants from single sprout seed rhizomes in the pro-trays and planted in the field after 30-40 days. The advantages of this technology are production of healthy planting materials and reduction in seed rhizome quantity and eventually reduced cost on planting.

Brief Review on Single Node Cutting of Turmeric

The turmeric is propagated by mother rhizome (shoot base) and finger rhizomes. The finger rhizomes of the species are considered to be different in size, because primary finger rhizomes developed from the shoot base have secondary and tertiary finger rhizomes which are different in size due to the differences in developing time (Padmadevi *et al.*, 2012). In addition, all the primary finger rhizomes are not developed at a time from a shoot base. Therefore, it is necessary to determine the optimum size of seed rhizomes for turmeric cultivation (Hosssain *et al.*, 2005). Evaluating the



effects of seed size on growth and development of plants is very important for increasing yield in the plant species producing different sizes of seed. The plants from 30 g, 40 g and 50g had a significantly larger shoot biomass and higher yield than those from smaller rhizomes in both the green house and field experiments. The shoot biomass and yield were highest in the plants grown directly from mother rhizome, and lower in the plants grown from daughter rhizomes attached to mother rhizome. This study indicates that the turmeric seed rhizome should be 30-40 g with a larger diameter, and seed mother rhizome should be free from daughter rhizomes Hossain *et al.*, (2005). Dhatt *et al.*, (2008) conducted an experiment with two genotypes (PH-3 and PH-4) and three planting materials (mother rhizome, primary and secondary fingers) on plant growth and yield. The genotype and genotype x planting material exerted non-significant effect, while planting material showed significant differences on most of the characters. Mother rhizome and primary fingers were significantly better than secondary fingers in respect of plant growth characteristics and yield/plant. Although, mother rhizome and primary fingers were at par in terms of plant growth, yield and size of secondary fingers, but former was a better planting material in terms of size of mother rhizome and primary fingers. It is therefore recommended that the growers should use either mother rhizome or primary fingers as planting material to raise the turmeric crop.

Method of Planting

- Select healthy Turmeric rhizomes for seed purpose
- Treat the selected rhizomes with mancozeb (0.3%) and quinalphos (0.075%) for 30 min and store in well ventilated place
- One month before planting, the seed rhizomes are cut into single buds with small pieces
- Treat the single bud sprouts (mancozeb 0.3%) for 30 min before planting
- Fill the pro-trays with nursery medium containing partially decomposed coir pith and vermicompost (75:25)
- Plant the Turmeric bud sprouts in pro-trays
- Maintain the pro-trays under shade net house
- Need irrigation with rose cane
- Seedlings will be ready within 30-40 days for transplanting



Advantages in single bud rhizome method of planting

- ✓ Less requirement of planting material
- ✓ Reduces cost of production (less quantity of seed rhizome)
- ✓ Crop establishment is good
- ✓ Early rhizome development (starts from three months after planting)
- ✓ Production of quality planting material
- ✓ The transplants may be planted in raised beds as well as ridges and furrows



References

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