



Establishment of Large Cardamom (*Amomum subulatum* Roxb.) Sucker Nursery at Sikkim

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Regional Station of Indian Cardamom Research Institute, Tadong (Gangtok) has scientifically established nurseries for large cardamom multiplication which were not in practiced earlier. Established certified nurseries, produced a large numbers of diseases free quality planting materials @ 1:5 ratio, which could be utilized in main field plantation, and gap filling. With the establishment of disease free quality sucker multiplication units at the station, now farmers are able to gain and generate quality planting material at their farms.

Introduction

Large cardamom (*Amomum subulatum* Roxb.), a member of the family, Zingiberaceae under the order Scitaminae is the main cash crop cultivated in the sub-Himalayan state of Sikkim and Darjeeling district of West Bengal. It is also cultivated in some other North Eastern Hill states like Arunachal Pradesh, Nagaland, Mizoram, Manipur, Meghalaya, Assam and parts of Uttarakhand. Nepal and Bhutan are the other two Himalayan countries where large cardamom is cultivated. Sikkim is the largest producer of large cardamom and constitutes for lion share of Indian and world market. The large cardamom plant is a perennial herb with subterranean rhizomes with leafy shoots. Stem is a pseudo stem which is called tiller. Inflorescence is spike. Generally, 30 to 40 flowers are observed in a spike. Flowers are yellow, bisexual, Zygomorphic & pollinated by bumble bees. There are three petals with a labellum which is mainly for attracting insects for pollination. Stamens possess filament and anther.

Anthesis occurs in the morning hours. Ovary inferior with ovules in axile placentation, stigma funnel shaped, fruit is capsule, achinated, maroon in colour with seeds which are whitish in immature stage and dark brown to black in mature stage. Disease and pest free planting material constitute the basic step for establishment of highly remunerative large cardamom garden. Since large cardamom is largely propagated through suckers, it is important to ensure its health and establishment.

Propagation

Propagation of large cardamom is done through seeds and suckers. Planting through suckers ensures true to the parents with a high productivity if they are collected from high yielding, disease free plants.

Propagation through Suckers

Selection of planting material

High yielding disease free plantations to be selected. The plantation should be having high yield record i.e. more than 800 kg/ha for at

least three consecutive years. One mature tiller with two immature tiller or vegetative buds is used as planting units.

Nursery site selection

The nursery should be about 500 meters away from the main plantation to avoid occurrence of pests and diseases. The irrigation facility should be available in the nursery. It should be easily accessible by road. Sloppy land is not suitable for nursery establishment.

Preparation of trenches

The trenches should be of 45 cm (1½ ft) width and 30 cm (1 ft) depth with convenient length & may be made across the slopes of the field. Top soil 15 cm (½ ft) to be kept separately from the trench in the upside. Below side 15 cm soil to be forked thoroughly. Dried leaves to be applied as layer in the trench first. Then the trench to be filled by top soil mixed with cow dung compost. Spacing of 30 cm is required in between two trenches. The planting units to be planted at a spacing of 45 cm (1 ½ ft) in between with proper staking.



Fig. 1 Dried leaves layer applied in the trenches



Fig. 2 Staking are given to large cardamom suckers

Pre treatment with bio- agents

Sikkim being an organic state, only eco-friendly and non chemical measures should be adopted. Suckers may be treated by dipping in 5% solution of *Trichoderma* sp. / *Pseudomonas fluorescens* and *Bacillus subtilis* for 30 minutes before planting in trenches as a prophylactic measure.



Fig. 3 Large cardamom suckers dipping in bio-agent solution

Time of planting

Planting can be done during last week of May to June. It should be done as early as possible

so that maximum number of planting units could be generated for the subsequent season

Maintenance

Thick mulching with dry leaf / grass may be applied at the base of plant and watering may be done during November to March depending on the soil moisture condition. Well decomposed cattle manure may be applied. The plot may be maintained with 50% shade under shade trees or using agro shade net. The disease and pest incidence to be looked from time to time. Disease affected plants to be uprooted and to be destroyed outside the sucker nursery. Spraying and drenching with 5% solution of *Trichoderma* sp./ *Pseudomonas fluorescens* and *Bacillus subtilis* in sucker nursery may be carried out once in three months starting from May-June, August-September, December-January. With proper management, a minimum of 5 planting units could be obtained from a single plant. Monitor the nursery once in a month and ensure water drainage. Weeding may be done, if necessary.



Fig.4 Establishment of large cardamom sucker nursery

Conclusion

The area, production and productivity under large cardamom have declined over the years. The major reasons for decline are menace of *Colletotrichum* blight, *Chirke*, *foorkey*, pest incidence, lack of improper planting materials, lack of irrigation and phytosanitary measures. To overcome these problems establishment of large cardamom sucker nursery at Sikkim was an urgent need to increase the area under its cultivation. Regional Station of Indian Cardamom Research Institute, Spices Board Tadong, Sikkim has therefore given emphasis on establishment of large cardamom sucker nursery for area expansion through gap filling and re-plantation.