Small Cardamom Cultivation in India

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Abstract

Small cardamom (Elettaria cardamomum) the queen of spices enjoys a unique position in the international spice market. It is often named as the third most expensive spice in the world after cinnamon and clove. The cardamom plants firstly came into existence in the monsoon forests of Western Ghats in southern India as wild herbs. Hot and humid environment prevailing under evergreen rain forests of the Western Ghats is ideal for this crop. In order to raise a cardamom plantation, seedlings or suckers of high yielding varieties are used. Superior quality produce achieved by good cultivation practices and scientific post-harvest management. Proper management of the plantation is the most important factor for successful cultivation of the small cardamom.

Introduction

Small cardamom (Elettaria cardamomum) popularly called as queen of spices belongs to the family zingiberaceae. It is originated in Western Ghats of South India. Small cardamom is the third most expensive spice in the world after cinnamon and clove. Cardamom is therapeutic in nature, broadly used to treat infections in teeth and gums, digestive disorders, throat troubles, skin conditions etc. The cardamom plants firstly came into existence in the monsoon forests of Western Ghats in southern India as wild herbs. Guatemala is the largest cardamom producing country followed by India and Tanzania. In India, small cardamom is mainly cultivated in Kerala (60%), Karnataka (30%) and Tamil Nadu (10%). Cardamom has been used as a medicine and in cooking since ancient times. It enjoys a long and fascinating history dating back to Vedic times, about 3000 years B.C. Earlier cardamom grew wild but nowadays it is grown as a secondary crop with coffee and arecanut.

Climatic Requirements

Small cardamom is mainly cultivated in warm humid and high rainfall regions, especially on the slopes of Western Ghats of south India at an elevation ranging from 600-1200 m above MSL. Hot and humid environment prevailing under evergreen rain forests of the Western Ghats is ideal for this crop because this region receives heavy rainfall during June-September from south-west monsoon followed by north-east monsoon in December. The optimum mean annual temperature range for cardamom is 18-23°C. Above 23°C the development and ripening of cardamom capsules are accelerated often leading to early maturity.

Soil Requirements

Soil with good drainage and rich in organic matter is most suitable for cardamom cultivation. Small cardamom generally grows well in forest loamy soils that are acidic.
in nature, the preferable pH being 5.5-6.5.

**Commercial Varieties**

Commercially cultivated varieties of small cardamom are Mudigere-1, Mudigere-2, Mudigere3, PV-1, CCS-1, ICRI-3 ICRI-6 and SKP-14 for Karnataka and ICRI-1, ICRI-2, ICRI-4, ICRI-5 and ICRI-7 for Kerala and Tamil Nadu.

**Propagation**

Cardamom can be propagated by seeds, suckers (vegetative) and tissue culture. Being a cross pollinated crop, seedling population is variable. Hence, vegetative propagation is normally adopted in case of elite clones. Vegetative propagation can be either through rhizome bits (suckers) or by micro propagation (tissue culture). In order to raise a cardamom plantation, seedlings or suckers of high yielding varieties are used. Seedlings are raised in nursery beds and they become ready for planting in the main field within 10-18 months.

**Planting**

The planting is carried out during the rainy season (June-July). The seedlings which are 10-18 months old are selected and planted up to the collar region for better growth. Cloudy days with light drizzle are ideal for planting. The seedlings are supported by the stakes and the plant base need to be covered with suitable mulching material. The fallen leaves of the shade trees are utilized for mulching.

**Manuring**

A fertilizer dose of 75:75:150 kg NPK/ha is recommended for the gardens under irrigated condition and a dose of 30:60:30 kg NPK/ha is recommended for the gardens under rainfed condition. Organic manures like compost or cattle manure may be given @ 5kg/clump. Neem cake may also be applied @ 1kg/clump. For split application of fertilizer, May and September is optimum time. Under rainfed condition, fertilizer should be applied in 2 splits. The first application helps in production of suckers and development of capsules, whereas the second helps in initiation of panicles and suckers. In irrigated plantation, application of fertilizer in 4 split doses at a quarterly interval is beneficial. Fertilizer should not be applied during heavy showers. Only half the dose of fertilizer is to be applied during the first year and full dose is given from second year onwards.

**Aftercare**

Weeding at frequent interval is necessary (May-June, August-September and December-January). Sufficient mulch should be applied during November-December to reduce the ill effects of drought which prevails for nearly 4-5 months during summer. Trashing should be done once in a year with the onset of monsoon under rainfed condition and 2-3 times in high density plantation provided with irrigation facilities.

Cardamom being psophytes is very sensitive to moisture stress. Shade helps to regulate soil moisture as well as temperature and provides congenial micro-climate for cardamom. Some common shade trees like Palangi, Jack, Red cedar and Elangi are planted. A thin layer of fresh fertile soil rich in organic matter may be heaped up at the base of the clump, covering up to the collar region by scraping between the rows or collecting soil from staggered trenches/check pits. Care must be taken not to heap the soil above collar region of the clump lest it tilts up the plant in course of time.

**Irrigation**

Irrigation is given at an interval of 10-15 days till the onset of monsoon. Sprinkler irrigation or drip irrigation at the rate of 4 litres per clump per day during dry months increases the yield. This ensures the growth round the year and fruits are available for picking almost 8-10 months in a year.
Harvesting and Postharvest Management

Small cardamom starts bearing after two years of planting. The peak period of harvest is during October-November. At 15-25 days interval picking is done. Capsules are harvested just short of full ripeness. Over mature fruits split on drying floor, whereas the unripe fruits shrivel on drying. An average yield of dry capsules from a well maintained plantation comes to 400-500 kg/ha.

Drying of capsules

Capsules are dried either in fuel kiln or electrical drier or in the sun. Soaking freshly harvested green cardamom capsules in 2% washing soda solution for 10 minutes prior to drying help retain original green colour during drying. Under flue pipe drier, it should be dried at 45°–50°C for 14–18 hr, while overnight drying at 50°–60°C is required under an electric drier. The capsules are spread thinly and stirred frequently to ensure uniform drying. The dried capsules are rubbed with hands or agitated to ensure uniform drying.

Cleaning, sorting and grading

Dried capsules are winnowed to remove any foreign matter. Sorting and grading is done based on the size and color of the dried capsules. Graded capsules are stored in black polythene lined gunny bags to retain the green colour during storage. These bags are kept in wooden chambers and sent to market as and when required.

Figure 2: Mature small cardamom capsules