



Large Cardamom Cultivation in North Eastern Hilly Region

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Abstract

Large cardamom (*Amomum subulatum* Roxb.) belongs to family Zingiberaceae and order Scitaminae is the most suitable cash crop for the hilly terrain of the state of Sikkim. Likewise, a large section of farmers in North Sikkim and most parts of Sikkim are engaged in large cardamom cultivation. For years cardamom has been the single most crucial cash crop to these stakeholders. Sikkim is the largest producer of large cardamom in India and it alone contributes around 88 percent to the national production. However, area and production of cardamom plantations in the state have been declining in the recent years putting livelihoods of several hill farmers to considerable risks.

Keywords: Large cardamom, Hilly areas, Medicinal value and North Eastern Hilly Region

Introduction

Large Cardamom (*Amomum subulatum*) is the most important cash crop in the eastern Himalayan region including Sikkim and the Darjeeling hills in India, the eastern part of Nepal, and southern Bhutan (Sharma *et al.*, 2000). It is also cultivated in parts of Uttaranchal and in some other North-eastern States. It is native to Sikkim (Sharma, 2000), known as „Queen of Spices“ (Maitra, 2007) and belongs to family Zingiberaceae and order Scitaminae (Bisht *et al.*, 2011). India is the largest producer of Large Cardamom with 54 percent share in world production. Large Cardamom has played a vital role in the economy of hilly regions as it is having export potential and contributes significantly in the state's economy in terms of direct or indirect employment and income generation. Sikkim has the largest area and the highest production of Large Cardamom in India. It is cultivated in all districts of Sikkim and has Large Cardamom plantations on their farm (Subba and Ghosh, 2017). It contains 2-3% essential oil and possesses medicinal properties. Large cardamom has a pleasant aromatic odour, due to which it is extensively used for flavoring vegetables and many food preparations in India. It is also used as an essential ingredient in mixed spices preparation. Apart from aroma, large cardamom also has high medicinal value.

Site and climatic condition: Indian cardamom research institute spice board (ministry of commerce & industry) govt. Of India regional research station Tadong, Gangtok-737102. Research farm: Pangthang, East Sikkim-737103. East Sikkim is situated at 27.3084° North latitude and 88.6723° East longitude with an altitude of 1400 meter above mean sea level. The climate in this state has five seasons: winter, summer, spring, autumn, and a monsoon season between June and September. Sikkim's climate ranges from sub-tropical in the south to tundra in the north. The average annual temperature for most of Sikkim is around 18°.

Planting: Large cardamom grows well in forest loamy soils with gentle to medium slopes. Water logged conditions are detrimental to the growth of the plants. It performs well under

shade. Utis (*Alnus nepalensis*) is the most common and preferred shade tree for large cardamom. The other species of shade trees are panisai (*Terminalia myriocarpa*), pipli (*Bucklandia* spp.), malito (*Macaranga denticulate*), argeli (*Edgeworthes gardneri*), asare (*Viburnus eruberens*), bilaune (*Maesa cheria*), kharane (*Symplocos* spp.), siris (*Albizia lebbek*), dhurpis and Khasi cherry, katuse, faledo (*Erythrina indica*), jhingani (*Euria tapanica*) and chillowne (*Schima wallichii*).

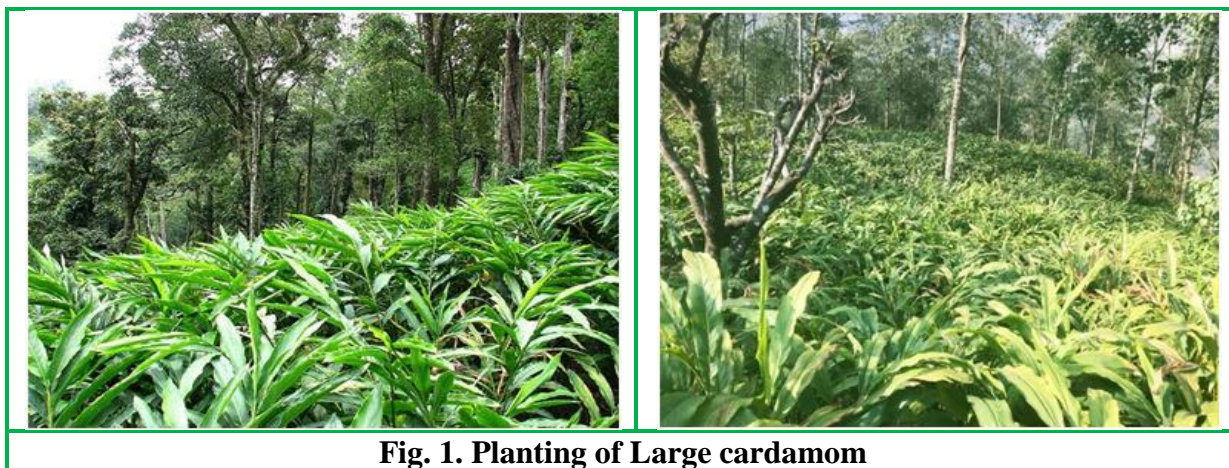


Fig. 1. Planting of Large cardamom

Land preparation (soil loosening) for large cardamom: Planting is done during June—July when there is enough moisture in the soil. The land selected for planting is cleared of all undergrowth, weeds, etc., for new planting, or if it is replanting, old plants may be removed. Pits of size 30x30x30 cm are prepared on the contour of the hill at a spacing of 1.5 x 1.5 m after the onset of monsoon showers. A wider spacing of 1.8x1.8 m is recommended for robust cultivars like Sawney, Varlangey, Ramsey, etc. The pits are left for weathering for a fortnight and then filled with topsoil mixed with cow dung or compost at the rate of 1-3 kg. per pit. Seedlings/suckers are planted in the middle of the pit. Care should be taken not to plant the seedlings/rhizomes very deep in the pit. After planting the seedling/suckers may be staked and the base of the plant is mulched with dry leaves.



Manuring: For a sustained production the soil fertility should be maintained at its optimum. Well decomposed cattle manure or compost and oil cakes may be applied at the rate of 2 kg per plant at least once in two years in April-May. If all the crop residues are recycled in the plantation, application of inorganic fertilizers may not be necessary.

Weeding for large cardamom: Weed control in the plantations is important for the maximum utilization of the available soil moisture and nutrients by the plant. Three rounds of weeding are required for effective control of the weed growth in the initial two to three years. Weeding can either be hand weeding or khurpi weeding.

Irrigation: In some of the large cardamom plantations, water sources are available which can be exploited to irrigate the crop by gravity flow, either through pipes, sprinklers or flood

irrigation through open channels. It is observed that productivity is higher in plantations where irrigation is provided. In case of sprinkler, irrigation equivalent to 35-45 mm of rain at fortnightly intervals is recommended.

Harvesting of large cardamom: The indication of the time of harvest is when the seeds of the topmost capsules turn brown. To enhance maturity, bearing tillers are cut to a height of 30-45 cm and left for another 10-15 days for full maturity. The spikes are harvested using special knives. The harvested spikes are heaped and capsules are separated and dried. The cured capsules are rubbed on a wire mesh for clearing and removal of the calyx (tail).

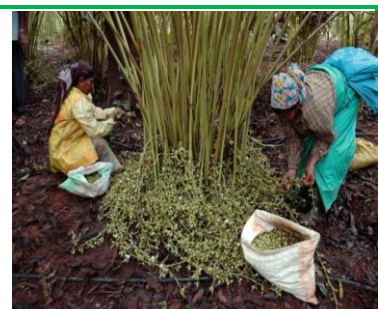


Fig. 5. Harvesting of Large cardamom

Fig. 6. Harvesting Equipment: Golley and Seremna knife

Uses: Large cardamom is mostly used as a spice for culinary purpose and also in several Ayurvedic preparations. It contains 2-3% essential oils, possesses carminative, stomachic, diuretic and cardiac stimulant properties and is also a remedy for throat and respiratory trouble. It is a high value, low volume and non-perishable spice.

Conclusion

The crop contributes significantly to the household economy which can be a better option for uplifting the socio – economic status of the organic large cardamom farmers. The study revealed that farming of organic large cardamom was capital as well as labor intensive. Large cardamom-based agroforestry systems in the Eastern Himalayan region is a multifunctional system predominantly managed by the smallholders as their adaptive traditional practices since time immemorial. Due to its ecological resilience, social acceptability and mountain specific niche cardamom has been described as high value, low volume and non-perishable cash crop.

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