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Traditional Production Technology of Large Cardamom under Longleng District of Nagaland

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Longleng is a smallest district of Nagaland, situated in the eastern region bordering towards Myanmar, lies between 94°E - 95°E longitude and 26°N - 27°N latitude of the equator, the district is mountainous with an area of 562 km^2. The home of the Phom Nagas is the tenth district of Nagaland. Longleng had a population of 50,484 of which males and females were 26,502 and 23,982 respectively. Longleng has an average literacy rate of 72.17 per cent. The area under large cardamom is about 245 ha and production is about 125 MT. Large cardamom (*Amomum subulatum* Roxb) belongs to family Zingiberaceae is an important cash crop of Longleng district of Nagaland. Cutivation of Large Cardamom has become one of the main occupation for the farmers because they earned huge source of income. Farmers of Longleng practices shifting cultivation i.e., growing of paddy in *Jhum* field with Large Cardamom. Large Cardamom is a perennial soft stemmed low – volume, high value crops which reached upto a height of 1.5 – 2.5 meter. It has a large tuberous rhizome and leaves of about 30 – 60 cm length and 5 – 15 cm width. The trailing leafy stalk grows from the base of the plant at ground level bears the seed pod. Green flowers with a white-purple vein tip are produced in a dense short spikes arising directly from base of the plant. The useful portion of large cardamom is the dried capsule, which has 40 to 50 small seeds and is grayish brown to dark red brown. The capsules are held together inside the spike with viscous sugary pulp and are 20–25 mm long and oval to globule in shape. It is harvested before it ripens to avoid the capsules from splitting during the drying. Large cardamom is used as a spice and also in several Ayurvedic preparations including the Unani system of medicine. It can be used to treat several ailments. The volatile oil of large cardamom seed contains 1, 8-cineole, α-terpineol, α-pinene, β-pinene, and allo-aromadendrene. It contains 2–3% essential oils. It possesses carminative, stomachic, diuretic and cardiac stimulant properties and is also a remedy for throat and respiratory trouble. The essential oil of large cardamom is reported to have antimicrobial properties. The seeds have a pleasant aromatic odour which can extensively be used for flavouring vegetable curries and many food preparations in India. The decoction of seeds is used as a gargle in infection of teeth and gums. Large cardamom seeds are considered as an antidote to either snake venom or scorpion venom and also used as preventive as well as curative measure for throat troubles, congestion of lungs, inflammation of eyelids, digestive disorders and in the treatment of pulmonary tuberculosis.

Climate and Soil: The climatic condition prevailing in Longleng district is congenial for growing Large Cardamom. The altitude ranges from 260-1306 m above MSL with an annual

average rainfall of 2000 mm. The Average temperature ranges from 18.03º C to 28.42 º C . It grows well under the shade of evergreen forest trees, under plantation and Jhum paddy fields with 50 % shade, Gentle to medium slopes are favorable for growing. It has also been observed that the crop grown near the perennial water sources gives luxuriant growth. Mountainous soil rich in organic matter with monsoon climate is the most favorable condition for growing.

Cultivars: Two cultivars of large cardamom namely Ramsey and Golsey are cultivated by the farmers of longleng district. Other two varieties which was introduce by KVK Longleng was cultivars Sawney and Seremna.

Propagation: Propagation of large cardamom is done through suckers or section of rhizome called slips. The suckers should be healthy and free from diseases. Suckers from 2-3 years old plant are selected for propagation. The plant are uprooted from the mother plant , the leaves and stem are trimmed off with knife to a length of 10 cm from the rhizome with one or two stem attached to the rhizome which are used for planting .

Land Preparation and Planting: The farmers followed traditional methods of land preparation. First of all they cleared the forest by cutting and burning the small shrubs, weeds and plants. They go for direct planting without pit digging and without proper spacing planted randomly by using a local dao (Knife – pointed and sharp at the tip) in the month of March – April before the onset of monsoon.With the intervention of KVK ICAR Longleng with training programmed and demonstration at farmers field pit size of 30cmx30cmx30cm is dug and planted at a distance of 1.5m x 1.5m. Suckers are planted in the middle of pit by scooping the top black soil into the pit covering the rhizome upto collar zone. Large cardamom is cultivated organically without used of any chemical fertilizer. Farmers of longleng only depend on rain water for irrigation.

Suckers ready for planting

Newly planted field

Healthy plants 2 years old

Flowers of large cardamom

Weeding: Weeding is done for proper utilization of available nutrients and moisture by the plant. Weeding of large cardamom is done along while weeding the *Jhum* field, weeding is done 3 times in a year with spade and Dao. Under plantation field weeding is done with Dao. It is done twice in a year in the month of June – July and Dec – Jan. After 2 – 3 years the intensity of the weeds decrease since the interred area soil around the plant is covered by the canopy of the plant.

Plant Protection Practices: Scientific Plant protection measures are not followed by the farmers of longleng. The farmers are so ignorant that a numerous small green tillers i.e., Foorkey disease was used as a suckers for expanding the area by planting in which the disease was spread widely in the field of the farmers. With the intervention of KVK Longleng diagnostic advisory were given to uproot the disease plant and destroyed them by chopping into small pieces and burned them.

Harvesting: Flowering starts in the month of February. Harvesting is done in the month of July and September. It is harvested by cutting the panicles with matured capsule. Matured capsule are harvested using traditional harvesting tools made locally by the farmers. Depending upon the soil type the yield differs. In fertile soil from one plant it yield 2kg fruit, in less fertile soil it yield around ½ - 1kg fruit. The economical production period is from 2-6 years after which the yield decreases. Highest fruiting is obtained during 3-4 years. Replanting starts after 6 years of fruiting.

Curing: Curing is the most crucial step in large cardamom processing, as capsule quality largely depends on curing conditions and methods. It is obvious that a certain amount of easily evaporable substances that are part of the essential oil content of large cardamom are lost during curing Curing at too high a temperature results in loss of volatile oil and charring of capsules, and curing at too low a temperature results in longer drying times and increased chances of mold growth. After harvesting the fruit are separated out of the panicle for drying. The freshly shelled fruit are washed with water and dried in sun for 1-2 days. After sun drying it is kept above the fire spreading on a wire mesh for curing. For proper curing the fruit are turned frequently until the fruit become lighter in weight. After curing the calyx or tail of large cardamom are cut manually with scissors or secateurs by the farmers and discard the damage capsule.

Packaging and Marketing: The Large cardamom is packed in a gunny bag after weighing and is ready for selling. Quality grading is done by the local dealers. The value chain of large cardamom consists of growers, collectors and traders. The costs of large cardamom per kilogram fluctuate with market from Rs 800 – 1500/kg.

Conclusion

Large cardamom production has declined in recent years due to viral foorkey diseases and other diseases, due to unavailability of quality planting materials, traditional cultivation practices, lack of improved smokeless dryer for curing to produce good quality capsule, laborious in activities like separating capsules from spikes, cutting of calyx from capsules and uncertainty of price in domestic market. Even though with many drawbacks in growing large cardamom the momentum of growing increases day by day due to its favorable climatic condition , soil rich in organic nutrients. There is also a huge scope for growing large cardamom because it generates income and improves the living standards thereby improving the livelihood of the farming community. As few farmers and villages of the district are flourishing with the growing of large cardamom many farmers and neighboring villages are also motivated to grow Large Cardamom.

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