



ESTABLISHMENT OF LARGE CARDAMOM CLONE MULTIPLICATION UNITS

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Abstract

The National Agricultural Innovation Project (NAIP) Components-III project livelihood improvement and empowerment of rural poor through sustainable farming system in North East India has been implemented in Dzongu, North District of Sikkim. An Ethnic tribe known as *Lepchas* is the main inhabitants of the area. Other few communities like *Bhutia* and *Nepali* speaking also are among them. Farming is considered as primary profession, where maize, millets, wheat are the staple crops. Large cardamom is main cash crops of the area and main source for the monetary requirement of farmers. The main cultivar of large cardamom cultivated in the area is Dzongu golshey. The NAIP project was initiated in 2007, with the objective of development of improved farming systems in large cardamom plantation in Dzongu, North Sikkim. North Sikkim contribute major portion of large cardamom from the state of Sikkim. The product from North Sikkim has high demand in National and International market as Mangan variety. 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 this problem National Agricultural Innovation Project (NAIP) intervention has given emphasis on establishment of large cardamom sucker multiplication nursery for area expansion through gap filling and replantation.

Key words - *Amomum subulatum* Roxb., Dzongu, NAIP, Nursery.

Introduction

Dzongu, the special *Lepcha* reserve, is situated in the North District of Sikkim amidst steep inclines and deep valleys in the last range of earth covered hills ahead of the rocky Himalayan snow clad peaks. An almost virgin territory with a scanty population of Sikkim's native inhabitants, it is a beautiful land of dense jungle groves and pristine glacial streams that nurture both the human and natural habitation around. Elevation ranges from 500m to 6000m and the extremes have nurtured an amazing diversity of plants and wildlife. Although agriculture is the mainstay of its natives, large tracts of the terrain is too steep to allow terrace cultivation of grain crops, so here the major produce is large cardamom which can comfortably take root and flourish in sloped inclines. Large cardamom (*Amomum subulatum* Roxb.) belongs to family Zingiberaceae and order Scitaminae. It is an endemic cash crop of the Eastern Himalaya with its origin in Sikkim (Subba 1984). Roxburgh (1820a) was first to describe this plant in his 'Plants of the Coast of Coromandel' and in 'Flora Indica' (1820b). It is mainly cultivated in Sikkim, the Darjeeling hills and to some extent in North Eastern States (Singh, 1978; John and Mathew, 1979; Gupta, 1983, Subba, 1984; Gupta and John, 1987). From Sikkim it has spread to North Eastern States and areas of West Bengal and neighboring countries of Nepal and Bhutan (Y.S. Rao *et al* 1993). The aboriginal inhabitants of Sikkim - The *Lepchas* - were believed to be the first to collect large cardamom capsules from natural forests primarily for the purpose of medicine and as an aromatic edible wild fruit. Those cardamom forests were eventually converted into ownership of the people and the crop was domesticated in the course of time (Sharma *et al*, 2008).

Materials and Methods

The baseline survey was done at the beginning of the project. The survey was conducted during 2008 under CoPI, RA, and GAP (Good Agricultural Practices) trained personal. Survey was done within two GPU among 111 households. The Passingdang GPU under NAIP intervention falls 42 household which has population of 289 individuals (137 male and 152 female). The Tingvong GPU falls 70 household which has population of 511 individuals (284 male and 263 are

female). Total land holdings as per survey showed the total as 707 ha with 80 % families residing in kutchra houses and farming is the main profession for 85 % of the population. During base line survey it was observed that there has been decline in the crop production due to various factors such as diseases incidence, methods of agricultural practices, lack of quality planting material, socio-economic conditions, lack of phytosanitation, absence of proper shade management, lack of irrigation facilities and lack of scientific methods of cultivation. During base line survey it was observed that there has been decline in the crop production due to various factors such as diseases incidence such as *Colletotrichum* blight, *Chirke*, *foorkey*, pest incidence, lack of quality planting material, socio-economic conditions, phytosanitation, absence of proper shade management, lack of irrigation facilities and lack of scientific methods of cultivation. After the base line survey report and interaction with the community main focus for NAIP, ICRI was the large cardamom, under which nurseries, replantation, gap filling, phytosanitation and plant protection measures. Planting materials for nursery were collected locally for their multiplication. Disease free suckers of location specific cultivars such as Dzongu Golesey, and Ramsey were produced through NAIP intervention and linkage with Spices Board, Development division, Zonal office at Mangan. Quality planting materials are the pre requisite for area expansion as well as for income generation. Nursery for large cardamom was adopted by the beneficiaries who were not in practice before. A high yielding disease free planting materials with the productivity of around 800 kg/ha for 3 years was selected, with one mature tiller and two immature tillers was used for planting units. The location of nursery was selected nearer to farmers' house to facilitated irrigation and easy access to the nursery. Trenches was prepared with 45 cm width and 30 cm depth. Top soil 15 cm was separated from trench in the upside. Dried leaves were applied as a layer in trench first and filled with top soil mixed with cow dung compost. Spacing between the trenches was maintained 30 cm and between two trenches 45 cm. Planting was done during last week of May to June. Mulching was done with dry leaves and grasses at the base of plants and irrigation were done frequently. Manureing was done with well decomposed cow dung and 50 % shade was maintained under *Alnus* trees or using agro shade net. Diseases affected plants were removed from time to time.



Fig 1. Shade regulation

Results and Discussion

Nurseries for large cardamom multiplication were adopted scientifically which were not in practiced earlier. Established 100 certified nurseries, produced 2, 50,160 numbers of quality planting materials within two years. Diseases free quality planting materials were produced @ 1:5 ratio, which could be utilized in main field plantation, and gap filling. 65.22 ha area of large cardamom have been gap filled and replanted with available quality planting materials (Table 1). Scientific cultivation of large cardamom started. With the establishment of disease free quality sucker multiplication units now farmers are able to generated quality planting material.

Table 1. Details on nurseries, replantation and rejuvenation

Parameters	Before	After
Nursery	Nil	100
Technology introduced	Nil	Clone multiplication units
Production	Nil	From 1 units av. 12,500 no. Sucker in 1 year achieved.
Replantation and Rejuvenation	Nil	65.22 ha



Fig 2. Clone multiplication unit

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