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Large Cardamom Farming in Eastern Nepal: Identifying Strengths, Weaknesses, Opportunities and Threats

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Abstract

Large cardamom, an important cash crop from eastern Nepal with significant potential in international trade, is facing challenges in terms of its production and market price. This study aims to document the perception of local farmers of Ilam district in regard to decreased production of large cardamom. First hand data were obtained through visiting the households of farmers and observing and documenting their daily chores for cardamom farming. Questionnaires were developed and were used in individual interviews (77), focus group discussions (4), and key informant interviews (5). The SWOT analysis revealed that the large cardamom farming possesses significant strengths, including high market price and minimum investment in terms of labor and fertilizer. However, it also faces notable weaknesses, such as vulnerability to diseases and environmental stresses. These strengths and weaknesses present several opportunities, including crop diversification, search for disease-resistant and superior varieties, and the adoption of scientific farming. On the other hand, the major threats encountered were the risk of uncertain return due to market price fluctuations, government oversight, lack of technical and scientific support, and vulnerability due to lack of skilled manpower and resources causing farmers to abandon large cardamom farming.

Keywords: Ammomum subulatum, Black cardamom, Ilam district, SWOT analysis.

Introduction

Large cardamom (*Amomum subulatum* Roxb., Zingiberaceae), also known as Black cardamom, Nepalese Cardamom, or 'Aalaichi' in Nepali, is one of the renowned spices of the world. Currently, it is cultivated across fifty-three districts of Nepal (Kalauni, 2019). In Nepal, districts of Eastern part, which includes Bhojpur, Dhankuta, Ilam, Panchthar, Sankhuwasabha, Taplejung, and Tehrathum, are the primary producers with 84% of the total large cardamom harvest (Singh & Pothula, 2013).

Large cardamom was introduced in Nepal in 1865 AD, and at present, Nepal is recognized as the leading producer and exporter of this spice (Bhutia et al., 2017; MoAD, 2015; Shrestha et al., 2018). However, the production and export of large cardamom have been inconsistent, with recent reports indicating a decline in its export in the international market from Nepal (Kalauni & Joshi, 2019; Rijal, 2013; Sharma et al., 2016). The market value of large cardamom has also experienced a significant decline from 3,000 per kg in 2015/16 to 875 per kg in 2016/17, that have remained unchanged until 2023 (Gautam, 2017; Gautam, 2023). This decrease in market price has had a significant impact in the economy of Nepal, given that large cardamom is one of the major exported cash crops of high economic value (MoAC, 2012). In addition to the decreased market price, the prevalence of diseases in crops has also been reported in recent years (Sharma et al., 2016; Yadav et al., 2021). Diseased plants in turn cannot produce good grade products and thus cannot fetch available higher market price (Kattel et al., 2020) which

negatively impacts the livelihoods of farmers, prompting them to shift towards crop diversification (KC & Upreti, 2017).

This study aims to document the perception of farmers about the present condition of large cardamom farming, the causes of decreased production, existing local management techniques, and their expectations about continuing large cardamom farming in Sandakpur Rural Municipality- 03, eastern Nepal. Based on the responses of farmers, we focused to prioritize threats and recommend ways towards good management practices for the improvement of cardamom farming. These findings would help the stakeholders to know the genuine problem involved in the large cardamom farming and suggest to fulfill the expectations of the farmers involved, that may ultimately help promote the farming of large cardamom.

Methodology

This study was carried out in Sandakpur rural municipality, ward number 3, Ilam district, Koshi province, eastern Nepal (Figure: 1) from May 2023 to December 2023. Following qualitative research approach, first hand data were obtained through visiting the households of farmers and observing and documenting their daily chores for cardamom farming. Semi-structured questionnaires were developed and were used in individual interviews (IIs), focus group discussions (FGD), and key informant (KI) interviews. All together seventy-seven households were visited for individual interviews (IIs). Four focus group discussions (FGDs) were organized and five key informants (KIs) were interviewed about the current status of large cardamom farming.

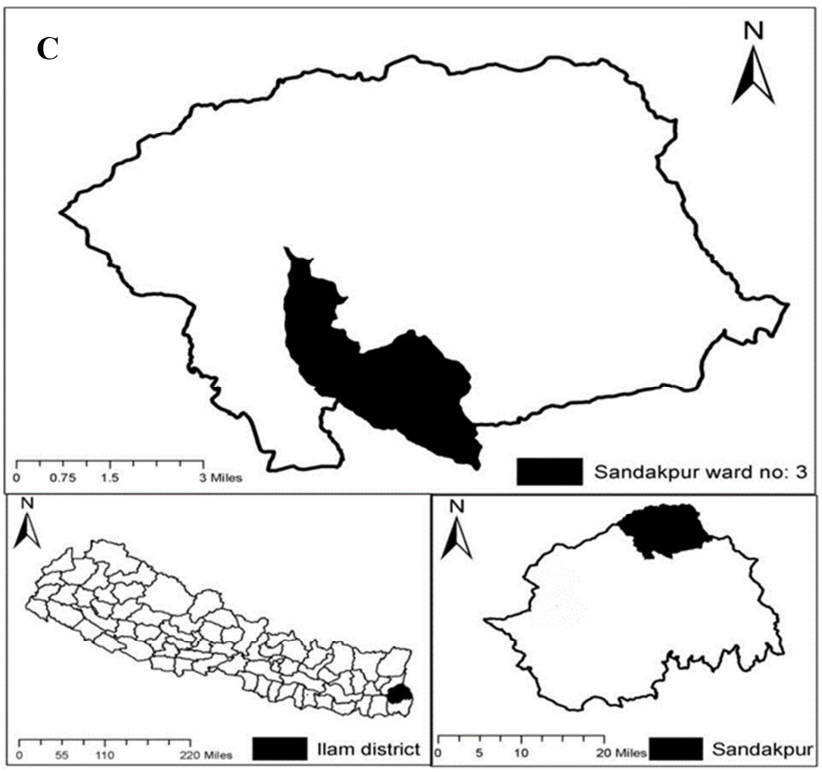

Fig 1: *Map of study area: A. Nepal; B. Ilam district; C. Sandakpur rural municipality*

Data obtained were subjected to SWOT analysis, as outlined by Teoli et al*.,* (2019) (Figure, 2). This strategic analysis technique allowed identifying the internal factors as strengths and weaknesses, and external factors as opportunities and threats within the sector of large cardamom farming. First of all, the problems were identified, and all the possible internal (strengths and weaknesses) and external factors (opportunities and threats) of large cardamom farming were identified from the perceptions and experiences of farmers.

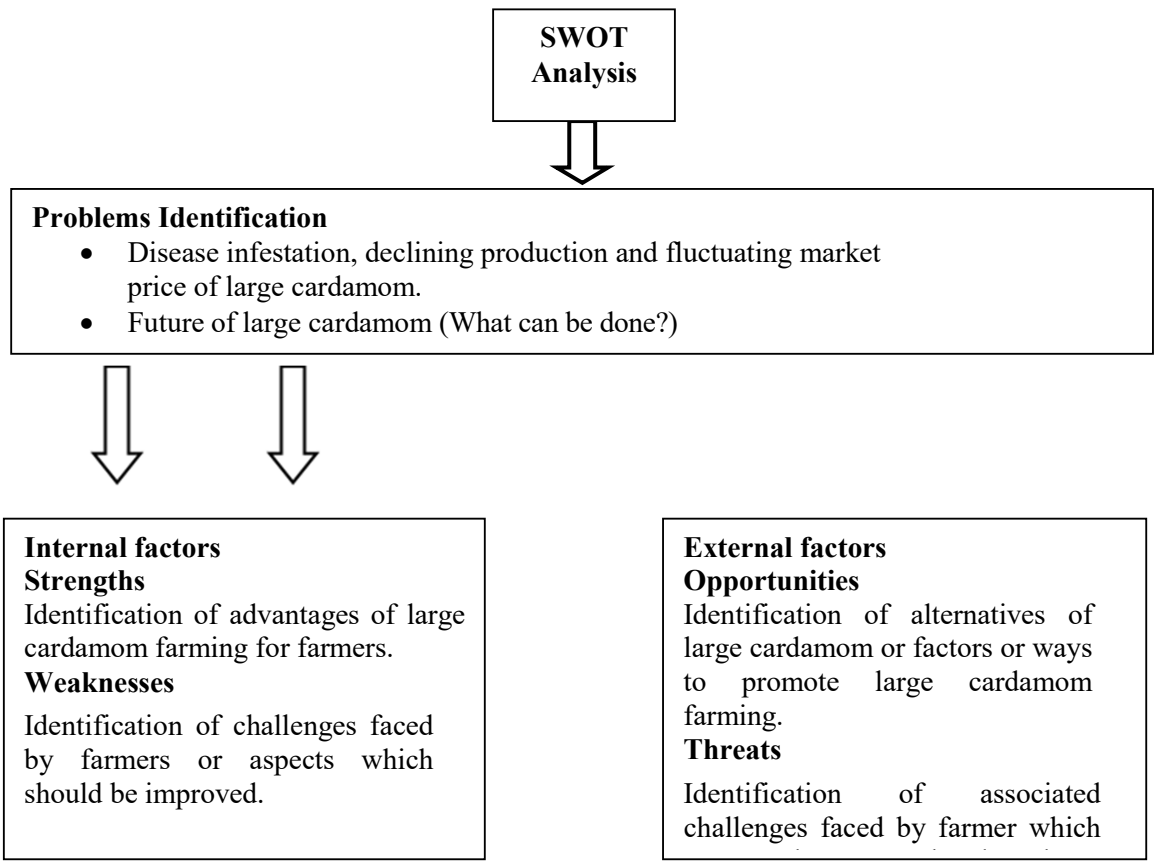

Fig 2: *Process of SWOT analysis (Teoli et al., 2019)*

Results and Discussions

Demography

Individual interviews were carried out with seventy-seven large cardamom farmers. The study revealed that most of the households (74%) were only involved in farming activities. However, the income generated solely from farming activities are relatively low, prompting the exploration of additional income sources. Out of the seventy-seven surveyed households, eleven households (14.3%) were involved in some form of small business, while nine households (11.7%) have a job along with large cardamom farming.

Significant portion (>80%) of the surveyed respondents have recognized the need to diversify their income sources beyond traditional large cardamom farming. So, they were also involved in cultivating varieties of other cash crops, such as, tea, kiwi fruit, and broom grass. However, the first choice for farming according to the farmers is always large cardamom. Additionally, engaging in small businesses, foreign employment and seeking stable 9-to-5 jobs are strategies employed by local people to supplement their agricultural income (Gentle & Maraseni, 2012; KC & Upreti, 2017; Oyekale & Oladele, 2012; Rakib et al*.,* 2014).

Large cardamom Farming: A SWOT Analysis

This study explored the strengths, weaknesses, opportunities, and threats (SWOT) (Table: 1) of large cardamom farming based on the farmer's perception and intend to shed light on the factors that shape it. Information obtained from individual interviews, focus group discussions and key informant interviews were subjected to SWOT analysis as follows:

Strengths

One of the primary strengths of large cardamom farming lies in its ability to provide a substantial income to farmers. The comparatively high market price of large cardamom is a significant incentive for farmers, offering the potential to uplift their livelihoods. Traditional large cardamom varieties, in particular, exhibit remarkable adaptability, thriving on various types of land, especially when irrigation facilities are available (Bhattarai, 2016). This adaptability of large cardamom ensures that farmers with various types of farmable land can engage in its farming. Furthermore, large cardamom is a hardy species which requires very less care and minimal chemical fertilizer, making the farming process cost effective. Additionally, farmers have inherited valuable knowledge and skills, passed down through the ages, enhancing their ability to cultivate this spice and make a living from it successfully.

Large cardamom farming stands out as an independent income-generating opportunity within the same cultivated land. Additionally, the planted trees in the farms of large cardamom provide much needed canopy to the traditional varieties and serves as a natural barrier, providing protection against adverse weather conditions. Further, farmers have mentioned that the trees, after attaining maturity, were being harvested for additional income. All the points listed above validate the advantage of large cardamom farming.

Weaknesses

Despite its huge potential, large cardamom farming faces several challenges. The most important one is the loss of production due to disease infestation and environmental stresses, which directly affects the income, and hence, the livelihoods of farmers (Bhattarai, 2016; KC & Upreti, 2017). These challenges have prompted farmers to shift towards improved varieties of large cardamom. Improved large cardamom varieties, which offer the promise of higher yields and resistance (Shrestha et al., 2018), require open and fertile farmland. This poses challenges for farmers, particularly those without access to such land and those who want additional income from harvesting trees. To protect these new varieties from frost and other environmental stresses, farmers have adopted artificial canopies made of hay, straw, or plastic nets. These requirements have added to the complexity and cost of cultivation of new varieties of large cardamom.

Furthermore, the cultivation of these new large cardamom varieties necessitates technical expertise, additional labor and extensive use of fertilizers. Such requirements may potentially discourage farmers, especially the younger generation, from engaging in large cardamom farming, which can be a more profitable compare to traditional varieties.

Table 1:
Tabular depiction of SWOT analysis

SWOT MATRIX	
Internal Factors	
Strengths • High market price and income potential • can be cultivated in diverse farmland with minimum investment in terms of labor and fertilizer • Adaptability of traditional varieties • Planted trees in the privately owned farm forest provide natural protection against environmental stress • Traditional knowledge and skills among locals.	**Weaknesses** • Production loss due to disease infestation and environmental stress, • Uncertain return due to market price fluctuations • Improved varieties need open land and artificial frost protection, • Requires technical expertise, time, additional labor and extensive fertilizer • Youth disengagement
External Factors	
Opportunities • Search for disease resistant and superior varieties • Diversification practices • Transition to more scientific farming practices	**Threats** • Government oversight and lack of technical and scientific support • Variation in rainfall pattern • Lack of skilled manpower and resources

Opportunities

The transition from cultivating traditional varieties through traditional methods to more scientific and intensive practices for modern varieties of large cardamom present significant opportunities for growth and sustainability of large cardamom farming. Additionally, diversification into alternative crops becomes a viable possibility to compensate for large cardamom losses (Indrawanto et al*.,* 2021; Kurdyś-Kujawska, 2021). Moreover, government should focus on proper market management and facilitation of trade can potentially alleviate the challenges faced by farmers and can motivate them to continue large cardamom farming.

Threats

Farmers claimed that changing climate patterns, disease infestation, and soil conditions pose significant threats to large cardamom farming for which they are seeking help from relevant authorities. These factors can lead to fluctuations in quality and yield, thereby impacting the income of farmers. The prevalence of diseases further exacerbates the challenges faced by farmers involved in large cardamom farming. Arguably, the most challenging task is the transition from traditional farming practices to modern methodologies and techniques. Farmers may show reluctance to this shift due toa lack of knowledge and expertise in modern techniques (Dorjee et al., 2003). Government support and guidance are crucial to successfully assist farmers through this transition as also mentioned in Fauzi et al., (2019); Felix & Ramappa, (2023); Ganguli, (2006); Indrawanto et al*.,* (2021); Kurdyś-Kujawska, (2021); Mzyece et al*.,* (2023); Santos & Gomes, (2022); Tashi & Wangchuk, (2016). The availability of skilled manpower and resources will encourage farmers to continue the large cardamom farming, which will in turn, will contribute to the nation's economic goals.

Conclusions

This study revealed that the farmers are seeking alternative income-generating activities, such as engaging in small business or securing stable 9-to-5 jobs, to sustain their livelihoods beyond traditional large cardamom farming. The SWOT analysis indicated that while large cardamom farming has strength such as high market price and low investment, it also has weaknesses such as, disease infestation and market price fluctuations, which pose risks to the farmer's livelihood. However, opportunities like crop diversification and the cultivation of new disease-resistant large cardamom varieties offer hope for the sustainability of large cardamom farming. To realize this potential, however, threats must be mitigated through effective trade management and by providing technical and scientific support to farmers. Such measures will encourage the farmers, especially the young generation, to involve in large cardamom farming.

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