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Estimation of Producers' Surplus of Large Cardamom in Arunachal Pradesh: A Value Chain Mapping

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ABSTRACT

Study was conducted in Anjaw district of Arunachal Pradesh to find out producers' surplus of large cardamom in the state of Arunachal Pradesh. The channel-I (Producer → Primary wholesaler → Secondary wholesaler/ trader → Retailer → Consumer) was found to be pivot channel which was preferred by 84 per cent of respondents. Although chain is long this may reduce the share of producers' in consumers' rupee. The marketable surplus (97.62%) was observed to be more than marketed surplus (96.90%) at margin level, indicates no distress sale of the produce in the study area. Hence, there is a scope of opening market yards at cluster of villages basis for purchasing of produce from the producers. The losses incurred at farmers' field and during the marketing of the produce were main concern and it necessitates for research and development to reduce the losses through intervention of scientific storage as well as trainings of the farmers on packaging of the produce. Hence, many opportunities like opening market yards, establishment of storage with its training to youth would help in livelihood and income generation of not only the producer but also to other unemployed youths. Hence, these identified opportunities needed to tap in the state of Arunachal Pradesh.

INTRODUCTION

Spices are integral to the Indian community, as not only it influence the Indian history but also an important additive in all the Indian cuisines. Besides offering culinary value in exquisite aroma, texture and taste, spices also possess tremendous nutritive and therapeutic value (Srinivasan, 2014; Bower et al., 2016; Dini, 2018) with the undergoing change in food habits all over the world, spicy food has become the order of the day in most developed and developing countries and are hence the most sought-after globally (Parappurathu and Mathur, 2006). India, blessed with varying agro-climatic zones grows different types of spices and holds a prominent position in the world's spice production (Bhardwaj et al., 2011). The country is the home of many spices as out of the 109 spices listed by International Standards Organization (ISO), 52 spices are under the purview of the Spices Board, Govt. of India (Divakaran et al., 2018). India, the 'land of spice' commercially produce many of the spices which includes seed spice and tree spice such as ginger, black pepper, cardamom (small and large), chili, turmeric, coriander, garlic, fennel, fenugreek, and cumin. The nation is not only the largest producer of spices but also the major consumer and exporter of spices in the world (Sugasini et al., 2018).

The North East (NE), green belt of India is the hub of major spices like large cardamom, ginger, turmeric, black pepper, chilli, bay leaf, *etc* which are in great demand and has tremendous potential (Hnamte et al., 2012). In the different stages of a value chain, different stakeholders add value to the product to increase the end product value. A value chain analysis study helps to map the value

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chain of product (Stein and Barron, 2017). The chain actors, who actually transact a particular product as it moves through the value chain, includes input dealers supply chain actors of product to the final consumers (Hellin and Meijer, 2006). As the product moves from one chain actor to another, it gains monetary value. (Diebacker, 2000; Azqueta and Sotelsek, 2007). The success of the value chain depends on how best the actors collaborate, share risks and uncertainties, offer technology and share the benefit (Sahoo, 2010). The value chain map is an analytical tool that helps in understanding policy issues that affects the functioning of the chain (Hellin and Meijer, 2006). Value chain analysis gives profound knowledge on the markets, relationships across the chain (Soosey et al., 2012). Therefore, developing value chains is often about improving access to markets and ensuring more efficient product flow. Hence, the main objective of value chain is both maximization of profits and aggregation of revenue (Neven, 2014). Schmitz (2006) explored the power of the global value chain approach. Producers' surplus and disposal pattern which are immense for developing the policy on production and post harvest management of the crop (Rajavardhan et al., 2020). Hence, the present paper is an effort to estimate of producers; surplus of large cardamom and mapping its value chain to study its disposal.

METHODOLOGY

The study was conducted in the Anjaw district of the state of Arunachal Pradesh. The state of Arunachal Pradesh is largest producer of large cardamom and contributing 20.39 per cent of production in with a share of 20.05 per cent area in North Eastern Hill Region (Spice Board of India, 2020). As the district of Anjaw was major contributor of large cardamom in respect to area as well as in production. The district has 15.14 per cent 16.73 per cent share in area and production of large cardamom in the state of Arunachal Pradesh (GoAP, 2018). Hayuliang market which was recognized as a major collection centre for the large cardamom in the district of Anjaw was selected for the study. A list of villages within the 10 km radius of Hayuliang market was prepared. Two villages *viz;* Tafraliang and Chirang were selected on the basis of higher number of large cardamom growers. A sample of 50 numbers of respondents by selecting 31 numbers and 19 numbers of large cardamom growers was drawn proportionately to the population of the large cardamom growers in both the selected villages. The data were collected for three year of 2017-20 from the large cardamom producers through well-structured interview schedule comprising of production, consumption, produce sold to different agencies, produce used for different purposes, produce loss during storage and during marketing and produce retained at household. Apart from Hayuliang market (Local); another Tinsukia market (Terminal market) was also selected to collect the information on disposal of the large cardamom. As the maximum share of the produce from the Hayuliang market was being disposed to Tinsukia market (Terminal market). Analytical methods included producer's surplus, marketable surplus and marketed surplus. Standard methods were used to analyse the producer's surplus.

RESULTS AND DISCUSSION

Mapping of value chain actors of large cardamom

Hayuliang collection centre as local market and Tinsukia as terminal market of large cardamom were selected purposively to study the disposal (actors map) pattern of large cardamom from the producer to ultimate consumers of large cardamom. A total of 11 number of actors were identified including 5 numbers in Hayuliang market and 6 numbers Tinsukia market. Out of 11 value chain actors; 3 number, 4 number and 4 number were identified as primary wholesalers, secondary wholesalers and retailers, respectively in both the markets. Out of 5 number of value chain actors of Hayuliang market (local market); there were 2 number of primary wholesalers, 2 number of secondary wholesalers and 1 number of retailer. Whereas, in Tinsukia market (terminal) out of 6 number of actors; only one primary wholesaler, 2 number of secondary wholesaler and 3 number of retailers were studied for the disposal of large cardamom.

Considering these identified actors, two major marketing chains namely; Channel-I: Producer → Primary wholesaler → Secondary wholesaler/ trader → Retailer → Consumer and Channel-II: Producer → Retailer → Consumer were identified and selected for mapping of the produce of large cardamom for its disposal from the farm of the producer (Figure 1). The channel-I was found to be a major channel as maximum quantity of 84 per cent of large cardamom was disposed-off and remaining quantity (16%) was through the another Channel-II (Table 1). Hence, channel-I (Producer → Primary wholesaler → Secondary wholesaler/ trader → Retailer → Consumer) was having the huge scope for value addition as well as livelihood generation as chain has different market actors. Although, the length of the channel was long that may affect adversely the producer's share in consumers' rupee. The another channel-II (Producer → Retailer → Consumer) has lesser scope of value addition as only one market actor was existed, although there may be more producers share in consumer's price for short time. Hence, value chain integration of channel-I have scope to generate mutual benefits for smallholder farmers and the business community (Singh et al., 2020).

The producers of large cardamom used their own sapling (suckers) for planting of next crop or they obtained from farmers friend of other villages or through the District Horticulture Office (DHO) as an incentives or assistance from government agencies for next crops. The healthy sapling emerged out of the old crop were selected and dug without disturbing the root planted in a prepared land. Sometimes, farmer practiced the use of seedling but faced difficulty in nursery preparation. The other inputs such as farm implements were available in the village market or nearby market.

The farmers performed the operations of land preparation, planting, inter-culture operation, harvesting, drying and marketing. Most of the farmers were having marginal and small holding with an average area of 1.60 ha. The farmers after drying disposed-off the produce to the primary wholesaler in the market. The transaction was on spot payment for the produce and no pre-

Table 1. Major marketing channels and actors of value chain of large cardamom in Arunachal Pradesh

Channels	Actors	Quantity (%)
Channel-I	Producer → Primary wholesaler → Secondary wholesaler/ trader → Retailer → Consumer	84
Channel-II	Producer → Retailer → Consumer	16

Source: Household survey, 2017-21

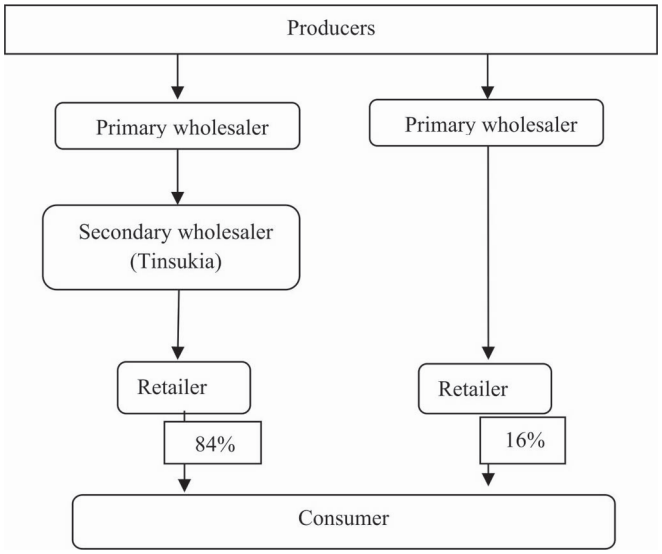

Figure 1. Map of value chain actors of large cardamom in Arunachal Pradesh

arrangement for selling of the produce. Therefore, the farmers sold the produce at any time to the wholesaler or retailer in Hayuliang market as per financial need of producer. Primary wholesalers in Hayuliang market of Anjaw district who are dealing collection of large cardamom and collecting the produce from the large cardamom producers either from the farm of the producers of surrounding villages or the large cardamom growers used to approach to primary wholesaler with their produce. The primary wholesaler of large cardamom established into the Hayuliang market having linkages further for marketing of collected produce to secondary wholesalers who are established in another market of Tinsukia in Assam state. These secondary wholesalers used to visit the market of Hayuliang market of Arunachal Pradesh to purchase cardamom. Further, these secondary wholesalers sold their produce to Siliguri market or Kolkat market of West Bengal in bulk. Sometimes, the retailers purchased the produce either from Hayuliang market or the Tinsukia market of Assam state. Then, the retailers disposed-off the produce in the local market packing in different quantity which enabled them to sale the produce on an average price of Rs 550 per kg in Tinsukia market of Assam and Rs 480 per kg in Arunachal Pradesh. Thus, there was a spatial price difference was observed in between two markets. Hence, large cardamom growers need to come together collectively in a form of cooperative to take advantages of prevailing high prices in Tinsukia market of Assam or the linkages may be developed further in between the cooperatives large cardamom growers and the market stakeholders of big markets like Siliguri and Kolkata of West Bengal. As it was observed and reported by respondents that due to lack of market information and marketing linkages, it forced them to sell the produce to the primary wholesalers of local market in the state of Arunachal Pradesh.

Producer's surplus of large cardamom

Production of large cardamom in household level was estimated to be of 338.42 kg in the state of Arunachal Pradesh. Out of the total production of large cardamom, the losses at farmers' field and loss during marketing were observed as 1.12 per cent and 0.72 per cent, respectively which was a serious matter of concern. Similarly, Nain et al.,2019) reported both the producer and consumer were at loss in the longer marketing chains and intermediaries reaping the major portion of the benefit. These results were similar to the findings of another study conducted on turmeric spice by Singh et al., (2020). Hence, research and development to develop the tool/ implement need to initiate to reduce such type losses of produce of large cardamom during storage and marketing of it. As similar policy measures were suggested by Singh et al., (2020) and Singh et al., (2019) in their other studies of other spices. The large cardamom growers of the state of the Arunachal Pradesh were resource poor consequently they were unable to afford such type of tools and techniques, hence, state government should come forward to manage such type of machinery at cluster level for the large cardamom growers of the state to avoid such losses. Small quantity was retained for home consumption and it was estimated of 0.53 per cent which was used in vegetables and curry making at household level as the people of the state of Arunachal Pradesh were habitual to take spices including large cardamom in their daily food. Similarly, for gift in kind to a friend has been estimated of 0.73 per cent. The marketable surplus was worked out to be of 97.62 per cent of the producers of large cardamom in the state of Arunachal Pradesh. Similarly, the marketed surplus of the crop was worked out to be of 96.90 per cent in the state. Hence, the marketable surplus was observed to be at higher side which signifies that large cardamom growers of the state were resourceful and there was no distress sell of the commodity (Table 2).

Table 2. Estimation of producers' surplus of large cardamom

Particular	Quantity (kg)	Percentage
Total production	338.42	100
a) Consumption	1.78	0.53
b) Loss during marketing	3.78	1.12
c) Loss at farmer's field	2.45	0.72
d) Gift	2.48	0.73
Total (a+b+c+d)	10.49	3.10
Marketable surplus	330.38	97.62
Marketed surplus	327.93	96.90

CONCLUSION

The analysis of producers' surplus and mapping of large cardamom produce has given in-depth policy implication. The channel-I was identified as most preferred channel on the basis of disposal of the produce (84%). Hence, this channel needs to strength more through technical and administrative interventions. Large cardamom producers' cooperative formation for marketing of produce was need of the hour to harvest the higher prices prevailed in Tinsukia market of Assam, Kolkata and Siliguri markets of West Bengal through developing of linkages of such cooperatives these markets. Scientific storage and training on storage and packaging of produce for marketing in the study area by line department of the state advocated for betterment of the large cardamom growers of the state.

REFERENCES

Azqueta, D. & Sotelsek, D. (2007). Valuing nature from environmental impacts to natural capital. *Ecological Economics*, *63*, 22-30.

Bhardwaj, K., Rohatash, K., Sikka, B., Singh, A., Sharma, M. & Singh, N. (2011). Challenges and Constraints of Marketing and Export of Indian Spices in India. In Proceeding International conference on technology and business management: March 28-30.

Bower, A., Marquez, S. & Mejia, E.G. (2016). The health benefits of selected culinary herbs and spices found in the traditional Mediterranean diet. *Critical Reviews in Food Science and Nutrition*, *56*(16), 2728-2746.

Diebacker, M. (2000). Environmental and social benchmarking for industrial processes in developing countries; a pilot project for the textile industry in India, Indonesia and Zimbabwe. *Integrated Manufacturing Systems*, *11*, 491-500

Dini, I. (2018). Spices and herbs as therapeutic foods. *Food Quality: Balancing Health and Disease*: pp 433-469. doi: https://doi.org/10.1016/B978-0-12-811442-1.00014-6.

Divakaran, M., Jayasree E., Nirmal Babu, K. & Peter, K.V. (2018). Legacy of Indian spices: Its production and processing. In: Sharangi A. *Indian Spices*, Springer.

GoAP (2018). Area and production of horticultural crops in Arunachal Pradesh. Department of Horticulture, Itanagar, Arunachal Pradesh.

Hellin, J. & Meijer, M. (2006). Guidelines for value chain analysis. Available at http://www. fao. org/3/a-bq787e.pdf.

Hnamte, V., Chatterjee, R., Chattopadhyay, P.K. & Pariari, A. (2012). Spices scenario in the North Eastern States of India with special reference to production and marketing. *Journal of Crop and Weed*, *8*(2), 109-112.

Momin, K.C., Suresh, C.P., Singh, Y.S. & Momin, B.C. (2018). The Promising spices of North East India: India's flavourful contribution to the world. In Indian Spices: The legacy, production and processing of India's treasured export. *Springer*, pp. 47-60.

Nain, M.S., Singh, R., Mishra, J.R., Sharma, J.P., Singh, A.K., Kumar, A., Gills, R. & Suman, R.S. (2019). Maximising farm profitability through entrepreneurship development and farmers' innovations: feasibility analysis and action interventions. *Indian Journal of Agricultural Sciences*, *89*(6), 1044-1049.

Neven, D. (2014). Developing sustainable food value chains: Guiding principle. Food and agriculture Organisation of the United Nation.

Parappurathu, S. & Mathur, V.C. (2006). Analysis of demand for major spices in India. *Agricultural Economics Research Review*, *19*(2), 367-376.

Rajavardhan, M., Sethi, B. & Singh, R. (2020). Supply Chain of Potato in East Khasi Hills District of Meghalaya: A temporal Analysis. *Indian Journal of Extension Education*, *56*(2), 76-82.

Sahoo, B.B. (2010). Global market and local players: A value chain system of collaborative strategies. *Agricultural Economics Research Review*, *23*, 535-554.

Schmitz, H. (2006). Learning and earning in global garment and footwear chains. *European Journal of Development Research*, *18*(4), 546-571.

Singh, R., Chahal, V.P., Feroze, S.M. & Kumar, S. (2020). Impact of factors share on productivity of ginger (*Zingiber officinale*) in NEHR of India. *Indian Journal of Agricultural Sciences*, *90*(2), 279–282.

Singh, R., Dympep, A., Passah, S., Feroze, S.M., Choudhury, A., Kumar, S. & Jhajhria, A. (2020). value chain analysis of Lakadong turrneric in Meghalaya: a micro-level study. *Agricultural Economics Research Review*, *33*(2), 239 -249.

Singh, R., Feroze, S.M. & Kumar, S. (2020). Production of turmeric in North Eastern Hill Region of India: A value chain analysis. *Indian Journal of Agricultural Economics*, *75*(4), 359-74.

Singh, R., Singh, M.P., Singh, R.K. & Chauhan, J.K. (2019). A study on mobile based agro-advisory in Meghalaya, *Indian Journal of Extension Education*, *55*(1), 71-77.

Soosey, C., Fearne, A. & Dent, B. (2012). Sustainable value chain analysis: A case study of oxford landing from vine to dine. Supply chain management: *An International Journal*, 17(1), 68 -77.

Spice Board of India (2020). Spice production in India accessed on 26.02.2020 https://www. indianspices.Com/sites/default/files/majorspicestatewise.pdf.

Srinivasan, K. (2014). Antioxidant potential of spices and their active constituents. *Critical Reviews in Food Science and Nutrition*, *54*(3): 352-372.

Stein, C. & Barron, J. (2017). Mapping actors along value chains: Integrating visual network research and participatory statistics into value chain analysis. Colombo, Sri Lanka.

Sugasini, D., Yalagala, P.C.R., Kavitha, B., Kasthuri, T., Vijayalakshmi, Y., Kumar, P.K. & Kumar, S. (2018). Indian culinary ethnic spices uses in foods are palate of paradise. *Acta Scientific Nutritional Health*, *2*(8), 22-28.