Value chain analysis of ginger in Panchthar District, Nepal

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<th>ABSTRACT</th>
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<td>The study was conducted to assess the value chain of ginger sub-sector in Hiliyang Rural Municipality, Panchthar District, Nepal. The study was conducted in ward No 6 and 7 of Hiliyang Rural Municipality under the area of block of ginger under Prime Minister Agriculture Modernization Project. The methodological tools such as household survey with 60 ginger producers using interview schedule, key informants interview and rapid market appraisal with ginger producers and focus group discussion among local traders, local collectors, and district level traders were used to collect information. The ginger producers were sampled using random sampling technique and the data were collected in 2018, Feb-June. It was found that majority of the respondents had agriculture as their primary occupation with average land holding area 0.944 ha with average ginger production area 0.088 ha. The average yield of the ginger was 12.40 MT/ha with average cost of production of ginger Rs.17.68/kg. Majority of the respondents had known about the trending price of ginger via local collectors and traders. Fresh ginger was the only product exported from the district as value addition was very nominal. Only cleaning, sorting and packaging activities were performed by the farmers who sold their produce to local traders who in turn supplied to exporter of Birtamode. The trend of ginger cultivation was found to be decreasing. Low as well as fluctuating market price, lack of proper storage and processing facilities were regarded as major problems in ginger marketing. Rhizome rot and Khumle kira was found as the main hindrance in ginger production. This research explored the existing scenario of ginger value chain and its major constraints in the study area.</td>
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Nepal is the third-largest producer of ginger in the world (with 11% of the global share in 2013) (GoN, 2016). It is used as spice in its fresh or dry form. Dried form of ginger contains 15% aromatic oil, 6% oleoresin while the fresh form contains 12.3% carbohydrate, 2.3% protein, 0.9% fats and some amount of vitamin and minerals. As in 2013/14, Ginger occupies 24226 ha with the production of 276150 MT and productivity of 11.40 MT/ha (Gautam and Mainali, 2016). Ginger is grown by an estimated 200,000 families (1.2 million people) in 5 zones of the country (Vancura, Peneva, & Cardenas, 2014). Recently, the product diversification of ginger in the form of ginger candy or powdered ginger is also taking place widely. Ginger of Nepal is liked in the international markets such as Japan, India, and Dubai due to its distinct taste and flavor. Major ginger producing districts of Nepal are Ilam, Panchthar, Salyan, Nawalparasi, Palpa, Doti, Tanahu, Kaski and Morang and from those districts more than 50% of the total ginger is produced. Ilam, Salyan and Nawalparasi are three largest ginger producing district with ginger production area of 3165 ha, 2050 ha and 1290 ha, respectively (MoAD, 2013). The Eastern development region has the highest share in terms of area of 7286.5 ha (30.58% of total) under ginger cultivation with production of 92343 MT (38.07%...
of total) and productivity of 12.67 MT/ha (Vegetable Statistics, 2071/72). The production of ginger in hilly districts of eastern development region is dominant (77.27%) of total produced ginger of that region (MoAD, 2013). The general objective of the research was to study the value chain process of the ginger subsector in Panchthar, Nepal and to identify the problems within the value chain process and hence find possible ways to solve them.

**Research Methodology**

The research was carried in Panchthar district: Ginger block at hiliyang rural municipality on the basis of the recognized production site for ginger through PMAMP. Panchthar district of Nepal lies at eastern mid-hill region of Nepal ranges from 609 masl to 3675 masl and it has 124590 ha (1241 sq. km) area (DADO, 2016) and lies in between 26°28’ to 26°59’ North latitudes and 80° 02’ to 87° 30’ East longitudes. About 48.36% of the total land in the district is cultivable and among this cultivated land 12.64% land is irrigated land, 4.82% semi irrigated land and 82.54% is non irrigated land. Temperature range of the district is 31.4°C (maximum) in summer and 7.8°C (minimum) in winter and the average annual rainfall in the district ranges from 2071 ml (DADO, 2016). The literacy percentage of the district is 55.55% (DDPO, 2016/17). Among the total household of the district 89% of them are agricultural household family (CBS, 2016).

The primary data was obtained from the questionnaire regarding to know the status of different activities held in value chain. Secondary information was collected from the various published materials like research articles, journals, proceeding of various NGOs and INGOs, reports of DADO. Pre survey field visits was conducted to gather preliminary information regarding the demographic, socio-economic, cultural and topographical settings of the site which was used in preparing questionnaires and deciding on sampling framework. The research was conducted in ward no-6 and 7 (Bharapa and Subhang, VDC) of hiliyang rural municipality of Panchthar districts. Among the total ginger growing farmers, 120 ginger growers were randomly selected. Furthermore, 10 collectors, 10 local traders and 5 distant traders were interviewed by selecting randomly.

The questionnaire was pre-tested prior to field survey for checking the reliability and validity and then necessary adjustment was made per the requirements after administering the questionnaire to the 5% farmers of vicinity area. One FGD was conducted where local ginger growers had participated. Data was fed to Microsoft excel and analysis was done by using statistical packages for social sciences (SPSS) and STATA12.

**Index of Importance on Production and Marketing Problems**

Different reasons for production and marketing problems based on the importance of farmer’s perception were analyzed by using three point scales of problems comprising high, medium and low importance by using 3, 2, and 1, respectively. The index of importance was computed by using the following formula.

\[ I_{imp} = \sum \left( \frac{S_i f_i}{N} \right) \]

Where,  
\[ I_{imp} \] = Index of importance  
\[ \sum \] = Summation  
\[ S_i \] = Scale value (3, 2 or 1)  
\[ F_i \] = Frequency of importance given by respondents  
\[ N \] = Frequency × highest scale value

The frequency of importance given by respondents was counted according to the ranking order provided by them to each of the reason. The sum of the obtained frequency and weightage was then divided by the total respondents and maximum weightage number which gave the index value. The reasons are ranked in accordance to the obtained index value.

**Value Chain Analysis**

The value chain describes full range of activities that are required to bring product or service from conception, through the different phases of production, delivery to final consumers and final disposal after use. The different existing value chains in the study area was drawn and analyzed. The cost of production and price paid to the concerned stakeholders was determined and margin to each actor in the value chains was calculated. Similarly, the producer’s share and marketing margin was calculated for each different chain in the study area. Also price spread at each step of the value chain were analyzed.
Research Findings

Major respondents were male (61.67%) and majority of people in the study area were Hindu (56.7%) followed by (32%), Kirats (38.3%) and Buddhists (5%). The literate respondents were 75% and 65% population in this area depend on agriculture for living. Besides agriculture, 11.67% were involved in government service and 23.33% went to abroad for employment. The average land holding was 18.88 ropani, among that average area under bari was 10.53 ropani, Khet 7.11 ropani, Kharbari and forest 6.89 ropani. Only 2% of farmers had grown ginger as their main crops and in rest farms maize was a dominating crop.

Majority of the farmers (80%) was medium size land holders, 7% were large size land holders and rest were small size land holders. Only 10% of the gingers producing households had the provision for irrigation and most farms (85%) followed rain-fed type of farming. Nase and Bose type of ginger was mostly grown spice crop in terms of area of cultivation (106 ropani) and production volume (12.2 metric tons). People had been involved in ginger farming since many years due to better income from ginger than other crops, high market value and with a hope to fetch higher price. The total cost of ginger cultivation per ropani was Rs.17.68/kg Out of this share of inputs (seed rhizome, organic manure, insecticides, fertilizers) was 62.31%, harvesting/transportation was 19.33% and labor cost was 18.36%.

Seed and Farm yard manure were the major inputs for the ginger farmers which were managed by them. The production of ginger was moderately unsatisfactory and trend of ginger cultivation was decreasing. Although there was no any special practice of packaging and handling systems prevailing in this area, grading of ginger was done on the basis of size and quality. The major form of transporting the product harvested was found to be in jeep, personal bike and in backpack while taking to the market. Farmers hired labor to carry ginger on back pack when they dealt on large volume of the products.

Cost of Production

Total cost of production per ropani was Rs. 19060. The highest cost in average variable cost was cost of seed rhizome followed by harvesting/transportation and labor cost. Usually, seed are being produced by farmers themselves and keep for next season plantation. Farmers keep 20 to 25 percent of their production as a purpose of seed. The cost of seed is usually higher than the fresh and thus major part of the cost goes in seed with 46 percent of the total production cost (HVAP, 2011). The cost of planting material alone accounted for about 70 per cent of the total cost of production per acre followed by human labor (13.8%) and farm yard manure (11.53%). Thus it is justified that the major portion of cost is occupied by seed.

Marketing Channel

The main market of the study area was Indian markets. The study revealed that about 15-20% of the products were kept by producers for consumption and seed purpose. Remaining 80% of total production was kept for marketing by the producers. Among that 80% of the marketing products, 95% was sold to the Indian markets and only 5% was sold in other markets. The other markets include the distant market like Birtamode where products were taken sometimes by the traders from their farm. 3.3 Value chain analysis.

Ginger value chain analysis was done to find out the links and information flow within the chain, the boundaries and linkage between national and international chain. The major actors were recognized along with their relationship, as well as value addition in each stage of chain, and weakness and strength of different chains that were taking place. The major functions, actors and facilitators/enablers involved in ginger value chain are described in this study. According to the ginger producers, major inputs for ginger cultivation were seed rhizome, Fertilizer, manure and packaging materials. Among which 96.67% of the seed rhizome and 100% of the manure required was managed by farmers themselves. 3.33% of the seed rhizome and 100% of the packaging materials were provide by local traders. 56.7% of farmers do not use fertilizers in their farming. In remaining user farmers, 10% of fertilizers were provided by PMAMP, 8.3% by Agro-vet and 25% of fertilizers were provided by both PMAMP and agro-vets existing in the near-by markets. Collection is the function after production which was done by local collectors and traders in study area Co-operative also plays role in collection and trading. The collected rhizome was then sold to the National
traders or Local traders at the large market. Local traders mostly collect the ginger from farmer fields. Most of the produce was sold in Indian market by exporters or traders but in recent period of time the export to India has been affected by many marketing constraints which is the major problem for ginger growing farmers. The function like cleaning, processing was not effectively done in local markets.

Problems in Ginger Production

All 60 ginger producers were asked to rank the stated problems in ginger production. According to the priority ranking of the ginger producers, Rhizome rot was found to be most problematic while post harvest loss was ranked least problematic.

Production Satisfaction

The 60 ginger producers were asked to rank their perception on satisfaction level of various aspects of production. The 5 levels of satisfaction were categorized as strongly satisfied, moderately satisfied, satisfied, moderately unsatisfied and strongly unsatisfied. The study showed that, producers were satisfied with the input supply and access to information while the satisfaction level gradually decreased. Ginger producers are highly unsatisfied with market price due to very low market price of ginger in the market.

Marketing Problem

Eight different market problems were stated and ginger producers were asked to rank the problems in accordance to their perception. According to them, the major marketing problem faced by the producers was low market price followed by lack of storage facilities, unorganized market, lack of processing facilities, unawareness of market price, problem in selling, quality issue and lack of transportation.

Conclusion

Farmers were involved in ginger cultivation due to better income and high value. Diseases like rhizome rot, insect infestation and low technical support hampers the production of ginger leading to low yields. Higher dependency is on Indian market and low bargaining power, low farm gate price of ginger and lack of storage facilities which lead to lower production. The establishment of cleaning and processing center within the country is for promoting value addition. Heavy dependency of ginger farmers on Indian markets should be minimized with market diversification. Fluctuating and low market price could be solved with product diversification.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding publication of this manuscript.

References


