Journal of Research in International Business and Management (ISSN: 2251-0028)
Vol. 9(4) pp. 01-010, August, 2022
Available online @ https://www.interesjournals.org/research-international-business-management.html
DOI: http:/dx.doi.org/10.14303//jribm.2022.017

Research Artice

Value chain analysis faba bean in the central highlands of Amhara region Ethiopia: The case of Bassonawerana and Tarimaber districts

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Abstract

Faba bean is one of the major pulse crops grown in the study areas with a considerable share in area coverage and volume of production. The purpose of this study was to identify the production status and the major value chain actors with their roles along the value chain. Data was collected by using quantitative and qualitative ways of individual interviews, focus group discussions, and key informant interviews from 550 smallholder farmers and 54 other value chain actors. A descriptive method like frequency, mean, and percentage was used. Actors and activity mapping, value chain mapping, and market governance methods were also employed. Farmers produced faba beans to generate cash income. Production and volume of supply trends for faba bean become declined due to biotic and abiotic factors. The value chain actors are governed from input supply up to final consumption through various value addition processes. Smallholder farmers performed a vital role in the production and marketing of the commodity. Retailers contributed a large share of market governance while processors earned a high-profit margin in the value chain process. Low investment for faba bean production contributed to low productivity and the poor quality of the produces which affected the desired demand. The grain price variations throughout the year resulted in inconsistent supply. Establishing and strengthening partnership linkage along the value chain actors will improve the farmers' production and supply of faba beans. Improving farmers' and extension workers' awareness will improve the quality and volume of product supply to the market.

Keywords: Analysis, Faba bean, Value chain

INTRODUCTION

Ethiopia has been followed an agriculture development-led industrialization policy. Agricultural products are subsistence agriculture (World Bank, 2004). So, different theoretical kinds of literature and practical works indicated having an efficient domestic agricultural commodity marketing system plays a major role in accelerating the growth and development of the sector. Besides, it makes the participants in the market chain such as input suppliers, producers, processors, traders, and consumers' beneficiaries as per their role and efforts exerted in the system (Mohammed & Muhammed, 2015). Farmers face incomplete transition and inefficient suppliers of agricultural products due to lack of information, market facilities, infrastructures (Feder, 1980). This inefficient and low supply of agricultural products creates the new driver of consumer demand, as mediated by the large scale downstream of buyers and retailers. There is an emergent phenomenon of market concentration, in the input supply industry, agro-processing, and in the retail, market segments while the agriculture market is fragmented. There is also the risk of supermarket chains progressively "crowding out" the informal agricultural markets that need to be acknowledged and mitigated (Christy et al., 2009). Pulses occupied approximately 13 percent of cultivated land and account for approximately 10 percent of the agricultural value addition which is critical to smallholder livelihoods in Ethiopia as a source of cash income and household consumption (Yirga et al., 2019).

Received: 05-Aug-2022, Manuscript No. JRIBM-22-72200; **Editor assigned:** 08-Aug-2022, PreQC No. JRIBM-22- 72200(PQ); **Reviewed:** 22-Aug-2022, QC No. JRIBM-22-72200; **Revised:** 23-Aug-2022, Manuscript No. JRIBM-22- 72200(R); **Published:** 29-Aug-2022

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Faba bean Production

According to CSA food legumes are widely cultivated in potential mid and high-altitude areas of the country characterized by elevations of 1800-3000 meters above sea level and receiving annual rainfall of 700-1100 mm. food legumes grow in several ecologies of geographical areas of Ethiopia including Arsi and Bale highlands, Central highlands of Ethiopia (South-West, West, and North Showa), Tigray, North, and South Wollo, North and South Gondar, East and West part of Gojam, Wollega, Guji highlands, Hadiya, Sidama and Gamo gofa. Yankson et al (2016) stated that as one of the top-performing crops under global warming and climate change because of its distinctive capability to excel under most types of climatic situations and broad adaptability to a range of soil environments. In addition, it refills soil fertility as it fixes considerable amounts of atmospheric nitrogen, thereby notably adding to system sustainability in rotation with cereals. Faba bean Vicia fava is one of the earliest domesticated food legumes in the world, probably in the late Neolithic period. The crop has a multi-use and is consumed as dry seeds, green vegetables, or processed food. Its products are a rich source of high-quality protein in the human diet, while its dry seeds, green haulm, and dry straw are used as animal nourishes (Sainte, 2011). Faba bean is mainly used as human food in developing and as animal feed in industrialized countries. Ethiopia is one of the world's foremost producing countries next to China which accounted for about 56% of faba bean production from Africa (FAOSTAT). Faba bean is among the most important pulse crop in the highlands and mid-highlands of Ethiopia. It was the first crop among the pulses grown in the country both in terms of area coverage and volume of annual production. food legumes occupied about 443,107.88 hectares of land with an annual national production of 8,389,438.97 tones with an average yield of 1893 kg ha-1(CSA). In Ethiopia, the average yield of faba bean under small-holder farmers is not more than 1.89 t ha-1 (CSA), despite the availability of high yielding varieties yielding over 2 t/ha). Faba bean production is insufficient because crop yields are low as a result of farmers' growing local varieties that are susceptible to diseases, insect pests, drought, and high summer temperatures (ICARDA). Faba bean grows in highland and mid-altitude areas of north Shewa under rain-fed and irrigation. Faba bean serves in the farming system for crop rotation purposes with cereal crops especially wheat, and barley. Farmers are highly demanding better yielding varieties to maximize their productivity and improve the livelihoods of their families. In the study areas, farmers allocated a large share of their farmlands to produce faba beans. According to the offices of agriculture reports, faba bean is the most important field crop grown by the farmers in the study areas. In Tarimaber farmers allocated 30% of their farmlands for faba bean production. Whereas in Bassonawerana faba bean producer farmers allocated their farmlands for the same crop areas share of 35% of their farmlands.

Faba bean marketing and consumption

The marketing of agricultural commodities differs according to the commodity, the system of production, the culture and traditions of producers and traders, and the level of development of the country and the sector within the country (Scott, 1995). Marketing for agricultural products is important in the creation of various types of the utility of place utility, form utility, time utility, and possession utility (Hasan et al., 2017). Faba beans also contributed to good sources of currency to the farmers and generate foreign exchange for the national economy of Ethiopia. Therefore, studying the agricultural value chain system for faba bean calls for an understanding of the commodity to take some measures in a way that improves its efficiency. A well-developed market for food crops in developing countries like Ethiopia provides access to consumers who depend on the market for their food supplies and to farmers, who need to shift from subsistence to market-oriented production (Ebbersten, 1983). The transformation of the production system for domestic and export agricultural commodities requires the existence of an efficient marketing system that can transfer the produced agricultural commodities from the point of production to the required market with the least possible cost. In 2015 Ethiopia is the second in Africa and the tenth world largest exporter of pulses crops. Nearly 16% of Ethiopian pulses were exported by pulses exporters of US$ 240 million in 2015. Which is 2.2% of world exports with an annual growth rate of 16% (Atnaf et al., 2015). The production system of this potential crop predominantly shared a high rate of farmlands and production volume in the study areas did not study yet. The value chain and the market governance of the actors for faba bean crop did not address in the study areas. Based on these reasons and suitable agroecology of the areas to improve its potential this study is very essential and should be addressed. Therefore, this study was conducted to identify the potential actors of faba bean and their market power relationships in North shewa highlands, to assess the economic performance and market participation status of value chain actors, and to evaluate the market decision power relationship of different value chain actors (Yankson et al., 2016).

Value chain analysis is a better alternative approach to conventional marketing to understand the determinants of producers' market orientation. It also enables researchers to analyze the different actors and their roles in the value chain; benefit shares among the actors and the intrinsic need for upgrading the chain. Though there were similar findings in the study areas, it did not focus on faba bean

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and was more general in its approach. This entails a need for a more comprehensive study that thoroughly analyzes the faba bean value chain in the study area. Therefore, in this paper, we analyze faba bean value chain with the specific objectives of assessing factors affecting faba bean producers market orientation; identifying the major faba bean value chain actors, their roles and benefit shares; and analyzing constraints and opportunities along faba bean value chain in the north shewa zone of Amhara, Ethiopia (Qualset, 1975).

Data and Methodology

Area description and sampling procedure: The study areas were selected purposively in which the land allocated for faba bean production has a large proportion. Bassonaworena and Tamaber woredas (Figure 1) are adjacent in location and found in the North shewa Zone of Amhara Region. Located 130 km North-East of Addis Ababa the capital city of Ethiopia. Most parts of these weredas are characterized as high lands and moist weather in wet seasons having moderate rainfall distribution with semi bimodal rainfall patterns. They received an average rainfall of 929 mm per annum. with cold annual maximum and minimum temperature of 21.4 and 9.0°C. Light soils are the dominant soil type in the areas (Woreda Office of Agriculture unpublished and undated document). The crops widely grown in the highlands of the study areas include barley, faba bean, wheat, and field pea (ibid). The altitudes of the woredas relatively similar ranged from 2400 up to 3100 masl for all intervention areas (ibid). The irrigation system is a little bit found in some areas of the areas used to produce vegetable crops. The areas are characterized as high lands predominantly with barley faba bean farming systems.

Data collection and sampling procedure: Cross-sectional data were gathered in three distinct ways of individual interview, key informant interview, and focus group discussions. Producer data were collected from 550 randomly selected producer farmers based on the probability of proportionality. The farmers were selected from the respected areas using Cochran (1977) formula of:

$$n = \frac{z^2 * p(1-\mathrm{p})}{e^2} \text{---------(1)}$$

Where n = the sample size, z2 = the abscissa of the normal curve that cuts of an area α at the tails (1-α) equals the desired confidence level of 95%, the area under the normal curve i.e. z= 1.96, P is expected prevalence of proportion. e is an acceptable sampling error hence is 5%. In this study, P=6.25%, N=3437, Z=1.96 with 95% confidence interval.

Value chain mapping relationship was set using 30 key informant farmers who have experiences in the production of faba bean representing all socio-economic classes of age, wealth, sex, and other social classifications and 24 small grain traders, processors, retailers, and extension workers from offices of agriculture and NGOs involved in two different groups set from each district for the focus group discussions.

The two groups were discussed independently, and data were gathered from both groups based on the checklists developed. The producer groups were discussed the production and marketing practices, market channels, challenges, and opportunities of faba bean production in their respective areas with the community level and their own experiences and exposures. While the processors,

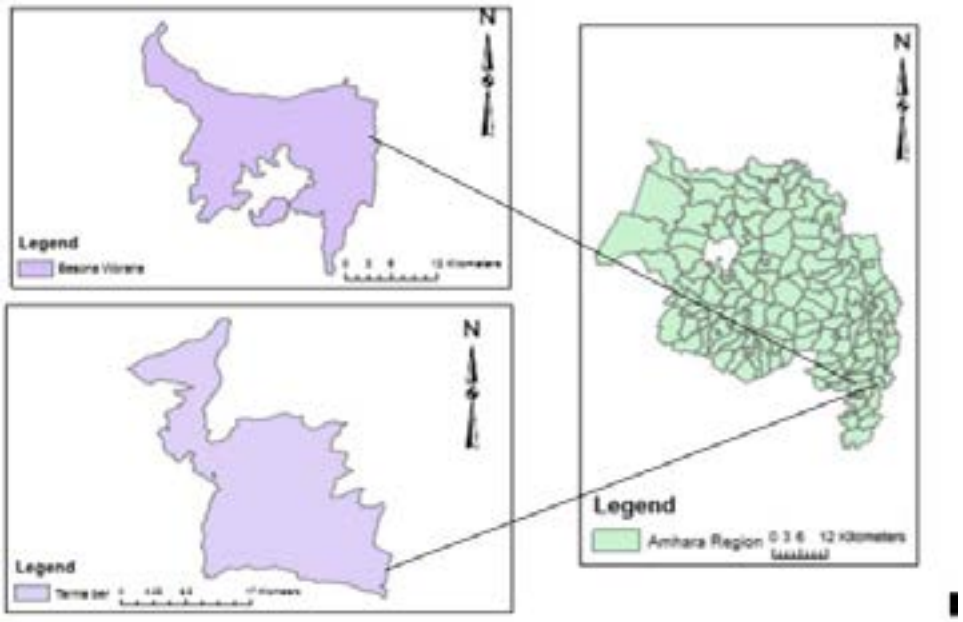

Figure 1. Maps of the study area.

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traders, and facilitator groups discussed the supply and demand gaps, the services provided, the market prices at different levels, faba bean supply trends, and the challenges. Finally, value-chain in-depth interviews were conducted, and value chain actors come to a consensus in the workshop. After the workshop, we had enough insight into the general functioning of the value chain and identified key actors. Additional interviews were conducted with key informants. These three ways of data collected from the producers, key informants, and focus group discussants were set and categorized for analysis.

Data analysis

Descriptive statistics of mean, frequency, percentage were employed to describe the socioeconomic variables, as well as production and market transactions activities. To analyze the marketing performance of the actors involved in the value chain of malt barley, similar steps used by Tegegn was followed. Marketing margin was calculated by taking the difference between faba bean producers' price and retail price. This was calculated mathematically as, the ratio of producers' price to consumers' price as expressed in Equation 2:

$$\Pr oducers\ share = \frac{\Pr oducer\ price}{Consumer\ price} = 1 - \frac{Marketing\ margin}{Consumer\ price} \text{--------(2)}$$

We compute Gross Marketing Margin (GMM) with Net Marketing Margin (NMM). According to Mendoza (1995) "marketing margins" should be understood as the gross marketing margins. Gross marketing margin is calculated as equnation 3.

$$TGMM = \frac{Consumer\ price - Producer\ price}{Consumer\ price} * 100 \text{----------(4)}$$

Total Gross Marketing Margin (TGMM) is important to analyses the margins and is given by the difference between producers (farmers) price and the consumers' price and is calculated as equation 4.

$$TGMM = \frac{Consumer\ price - Producer\ price}{Consumer\ price} * 100 \text{----------(4)}$$

The benefit share of an actor (j) is computed from TGMM of the actor at that stage and is calculated as given in Equation 5.

$$GMM_j = \frac{SP_j - PP_j}{TGMM} * 100 \text{----------(5)}$$

Where SPj is the selling price at the jth stage and PPj is the purchase price at the jth stage.

Value chain mapping, actors and activity mapping matrix, and market governance methods were used to identify the actors' involvement in the value chain.

RESULTS

Socio-economic characteristics

The most common household characteristics important for agricultural activities identified in this study included sex, age, family size, level of education, farming experience, and access to extension service. The result showed the proportion of female-headed households constituted about 20% of the total sample households and the balance was their counterparts. Households' important characteristics that describe the compositions age, education status, family size, and farming experiences can determine agricultural production activities in the agrarian family and provide a clue to the structure of the sample and the population too. The mean age of the household head was about 43.9 years. The average family size of the households was estimated at 5.24. The study areas have a potential for short (Belig) and main seasons rain access for crop production and irrigation potential during the off-season. This helps the farmers to produce different agricultural products throughout the year. All farmers produce agricultural products including faba bean in the main season and more than half of them participated in belig (short rainy) season. The average year of production experience in the main season was 19.5 years with low years of experience in the irrigation system production practices (Table 1).

Landholdings and land use

The average size of land and types of land used by farmers in the study areas are illustrated in table 2. In this study, farmers had an average of 1.3 + 2.97 ha of land. Of which, farmers have used 1.05 + 1.06 ha for crop production and 0.24+0.06 ha for grazing and forage development. The farmland was covered by different crops of faba bean and other crops. The average area of land covered by faba bean per household in ha indicated was 0.35 + 0.25 ha. Very small hectares of land are used for homestead and other purposes. A large share of land is allocated for crop production purposes compared to others followed by grazing and tree plantation purposes. Since the area is a milk shed for dairy products and good market access for milk farmers allocated their land for livestock forage production. Tree plantation is now other sources of cash and farmers grow trees on farmlands for cash generation (Table 2).

Faba bean production practices and area share of crops grown

Production practices: The area is characterized as a barley-faba bean production system. Only thirty percent of the growers used an improved faba bean production system. 80% of the producers applied Broad Bed Furrow (BBF) methods for drainage of excess water for crop production. There were no such improved production practices implemented in the study areas that contribute to yield improvement during the study time. Farmers did not apply modern agricultural practices, like proper crop rotation system, use of the improved seed, weed management practices, soil fertility improvement practices, application of seed cleaning practices, and use of appropriate seed and fertilizer rates (Table 3).

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Table 1. Socioeconomic chrematistics of households.

Variables	N		%
Sex			
Male	440		80
Female	110		20
	N	Mean	Std. D
Age	550	43.89	12.3
Literacy rate	550	3.15	3.38
Family size	550	5.24	2.05
Farming experience in the main season	550	19.5	12.56
Farming experience in bulge season	329	19.31	12.02
Farming experience using irrigation	129	13.88	11.97

Source: Author's survey in the 2014 year

Table 2. Landholding and uses of the land.

Number of plots allocated for	N	Mean	Std. Dev.
Crop production	549	1.05	1.06
Area share of faba bean from cropland	317	0.35	0.25
Grazing and forage development	180	0.24	0.06
Tree plantation	120	0.14	0.04
Homestead	549	0.001	0.00
For other	120	0.17	0.16
Average land holding / ha	550	1.34	2.97

Source own data manipulations

Improved faba bean varieties under production

There is a good future domestic market potential for faba bean. The major faba bean production challenges in the study areas included low productivity, disease, frost, and lack of early matured varieties. Farmers are interested in different varieties based on their preferences. They preferred high yielder varieties for high potential areas and early matured varieties for frost-prone areas. The faba bean varieties under production in the study areas included Wolkie and Gebelicho. Wilkie variety selected by the producers for yield compared with Gebelicho and local variety preferred as a second alternative for its adaptability (Figure 2).

Yield gap sources

75% of the areas applied fertilizers with a low rate of application for other crops. Faba bean gall disease infestation affected the quality and quantity of production. There is low faba bean gall disease management practice though alternative technologies are available. Farmers used different agricultural inputs for the improvement of crop production and productivity. In general, fewer numbers of farmers among the growers applied farm inputs for crops they produced from the total producers. The Majority 86% of faba bean producer farmers applied compost to produce faba beans (Table 4).

Perceptions of the farmers

From the focus group discussions and key informant interviews, the participants discussed the production trends and the importance of faba beans. The participants explained that over the past 5 years the status indicated continuous changes in area coverage, the volume of production, and productivity of major crops. Farmland is shifted from faba bean to malt barley production and the area coverage of faba bean become declined. Smallholder farmers perceived that pulse crops including faba bean have the benefits of improving food security, as an affordable source of protein, it requires low input and labor demand and costs compared to cereals. A small amount of chemical fertilizer is enough to produce faba bean. Faba bean can have an income benefit for smallholders, both in terms of crop diversification and high-profit margins compared to cereals, and contribute to improving soil fertility. The production trend of faba bean varied resulted from different reasons of challenges like disease and insect pest problems and lack of available opportunities like improved technologies (Woldesenbet, 2013).

Area coverage and volume of production

They have also limited crop commodity alternatives for their production environment to produce other crops which are not well performed in the highland areas. The production and area coverage of faba bean in the study area declined because of biotic and abiotic stress that emerged in the study area. The newly emerged disease called faba bean gall damaged it and irritated the farmers to produce it (Table 5).

Table 3. Barley faba bean production practices.

Applied farming practice implemented	N	percent
Crop rotation practices	4	1.26
Row planting practices	54	17.04
Weed management practices	104	32.81
Seed treatment and cleaning practices	9	2.84
Use of improved seed	164	51.74
Recommended seed rate	39	12.30
Soil fertility conservation practices	37	11.67

Source 2014 survey data manipulation

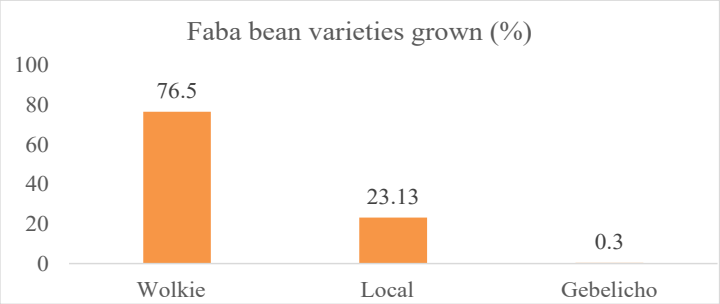

Figure 2. Faba bean varieties grown in the study area.

Table 4. Agricultural inputs application to produce crops.

Production inputs used	Crops grown			
	Faba bean		Other crops	
	Freq	%	Freq	%
Urea	0	0	253	48
DAP/NPSB	24	12	230	44
Compost	178	86	89	18
Herbicide	4	2	218	42

Source survey data calculation

Purpose of production and utilization

Faba bean was produced in the study area and the output was allocated for different purposes. From the focus group and key informant interviews farmers used faba bean for various purposes of consumption, market, and seed reserves. Farmers confirmed faba bean is produced mainly for market and home consumption purposes (Figure 3).

Value chain actors' relationship in production and marketing processes

Private sectors are involved in the production, transportation, processing, input supply, product distribution, and consumption of faba bean products. The public sectors are also involved in input supply, capacity development training, and facilitation roles in the value chain. Non-Governmental Organizations (NGOs) are also involved in both input supply and facilitation activities in some interesting areas. Faba bean value chain actors participated from input supply to consumption of the products. Farmers are primarily involved in the production and marketing of faba beans. Traders and processors acted on different levels of value addition processes (Table 6).

The map shown below provided the value chain map of faba beans in the study areas. The map showed the actors, their relationships, and economic activities at each stage with the related physical and monetary flows. Faba bean products pass through different phases of production, processing, and marketing to reach the final consumers. The downward arrow shows the flow of products and the upward arrow shows the flow of money movement while the flow of information is going in two ways of upward and downwards flows in the study areas. The value chain mapping of faba bean indicated there is enabling environment to improve farmers' knowledge on production and field management through the existing extension system (Anil et al., 2013). The seed has been delivered by seed enterprises, research institutes, and some NGOs, Other inputs like fertilizer and chemicals are supplied by cooperatives and agro-dealers. Buyers of the produce participated in the marketing of faba bean including processors, supermarkets, hotels and restaurants, other groups, cooperatives, and traders (Figure 4).

Table 5. Faba bean production by the study areas.

District	Area in ha	Production in(t)
Bassona werana	5312.5	11166.25
Tarimaber	2418	4836

Source office of agriculture 2016 report

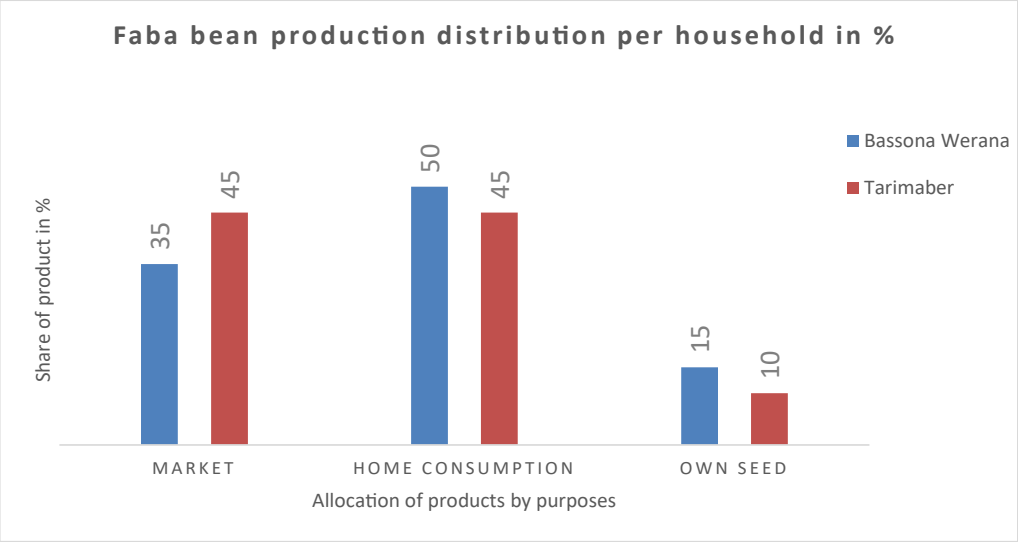

Figure 3. Production purposes and their share by the study areas in %.

Table 6. Activities and actors analysis matrix.

Actors	roles in the value chain	Limitations	Existing challenges
Farmers	Production of crops	Low quality and quantity of supply	Pest and diseases of faba bean
Multipurpose Cooperatives and unions	The input supply and marketing on faba bean	Low financial capacity for marketing	Low attention to marketing involvements
Grain traders	Input supply, marketing, and transportation	Dis organized	Adulteration, not trust by farmers,
Processors (local baltina, hotels, and restaurants)	Marketing, roasting, splinting and crushing of faba bean to Kik and powder	Low attention for quality products and production improvement	Not interested in partnership linkages
Seed enterprise	Seed supply and seed marketing	Not, enough seed for improved varieties	Low attention for faba bean seed
Extension workers	Facilitation, awareness of farmers	Low capacity, many task burdens	Low attention for market linkages
Research institutes (DBARC, ILRI ICARDA)	Capacity building, input supply, facilitation, technical support	Limited area visits, low exposures,	Dis organized interventions
NGOs (SUNARMA, Adhino, CCF)	Input supply, market linkages, technical support	Limited area coverage, specific interest	Dis organized from other actors
Public sectors (OA and AGP)	Facilitation, technical support, and input supply	Limited intervention	Dis organized
Consumers	Consumption of the produce	Needs direct market from the producers	Low interest for value-added produce

Source: own data manipulation

The value chain functions start from farm inputs, preparation of their farms, or gaining of the inputs from other sources to post-harvest handling and marketing. Farmers are the key actors in the value chain. The major farming and value-adding activities which are performed by faba bean producers include plowing, sowing, fertilizing, weeding, pest/disease controlling, harvesting, and post-harvest handling (cleaning). The larger quantities of faba bean are sold during and soon after the main harvest season to cooperatives, grain traders, processors, and retailers to consumers of the area within the same production years. About 50% of faba bean produced passes through different

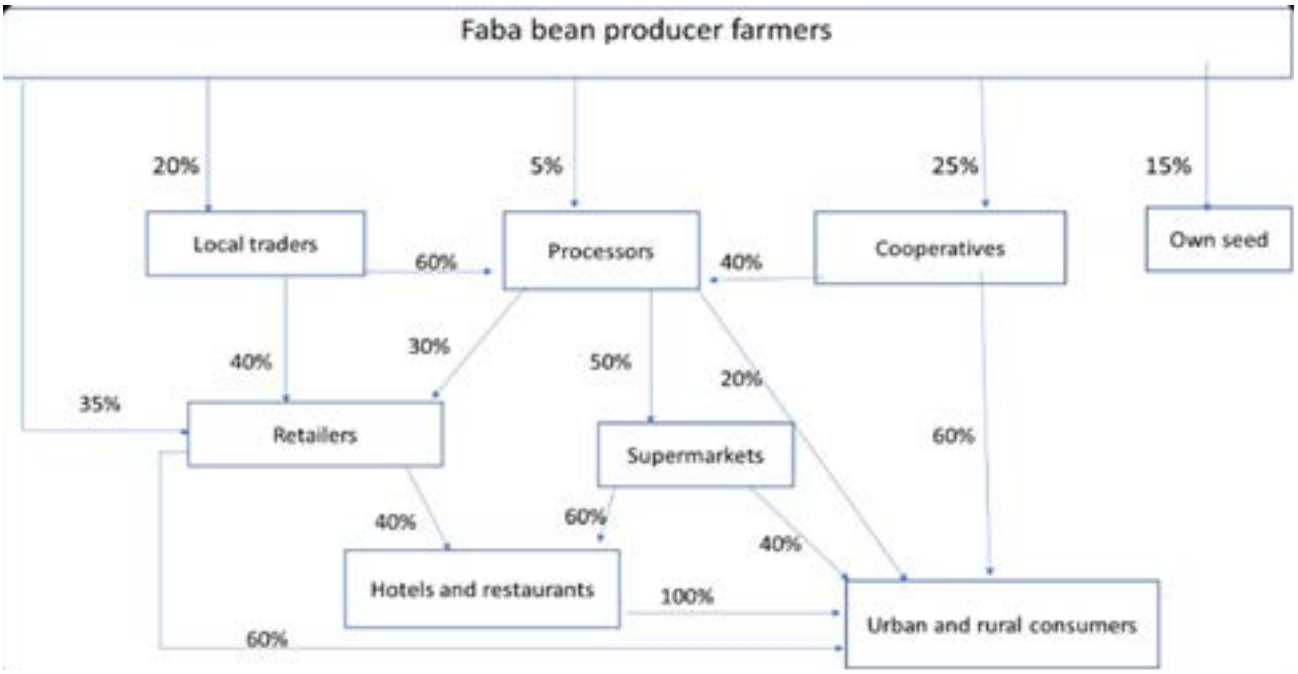

Figure 4. Faba bean marketing channels mapping.

marketing channels and cooperatives have a share of 25% of it. The local processors obtained the products mainly from grain traders and cooperatives in the value chain. The consumers accessed the processed faba bean produces through various forms of grain, powder (shiro), splits (kik), and foods. From this analysis retailers had relatively large market governance power and they decided on about 35% followed by farmers cooperatives and grain traders.

Cost-benefit analysis of faba bean in the value chain

Farm-level cost-benefit analysis of faba bean production and marketing: The costs of production were collected based on farmers' implementation practices, crop input requirements, and technology package formulations. The average production cost of faba bean per hectare of land resulted from high seed rates lead to higher seed cost and field management costs of chemicals for disease management. Faba beans had higher benefits resulting from low fertilizer costs and high market prices. Farmers in Basson werana earned high net income resulting from both better productivity and the high market price of faba bean (Table 7). Market prices varied from 12,000 to 15,000 Birr/ton in high and low supply seasons depending upon the production volume trends. The average farm-gate price at immediate harvest were 13,700 and 14,000 Birr/ton for Tarimaber and Bassonawerana districts, respectively.

Other value chain actors' cost-benefit analysis

Many actors are involved in faba bean processing activities and produce different faba bean products for different uses. Faba bean is finally consumed as end products of full or kik wot and soup or shiro wot in the local market. The end products passed various steps from production to consumption. The end products depend on the grain or seed sizes of faba bean. Soup or shiro wot produced from small-seeded faba bean types obtained a higher net return compared to powder shiro. Kik produced from large-seeded faba bean had the lowest net return in the value chain. In general, when the value addition of faba bean increased the net benefit from the commodity increased along the value chain. Local processors (baltina) used small-seeded faba bean grain to produce a powder which is locally called "shiro". Large seeded faba bean processed for splits into "kik" and graded for food items locally called "full ". Farmers cooperatives and traders bought the grains from the producer farmers and resoled the grain for local processors to make shiro and kik. The processors graded their produce and sold it to the local consumers, and bars and restaurants for preparing soup for final consumers (Table 8).

Challenges along the value chain

From both FGD and household survey responses very common set of constraints span the production, collection, transportation, and demand sinks on faba bean value chain. Different actors explained the challenges along their distinct value addition stages. Farmers reflect production challenges that hindered the improvements of quality and quantity of the produces. Various actors faced distinct challenges to facilitate the value additions process and to smoothen the production and consumption process.

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Table 7. Average cost of production.

Cost items	Costs in Birr per unit area of land (ha)	
Seed	2200	
NPS	938	
Labor	3200	
Chemicals	700	
Transportation	1200	
Bio-fertilizer	120	
Baggage	240	
Draft power	2400	
Total cost/ha	10998	
Benefits	Bassonawerana	Tarimaber
Yield T/ha	2.1	2.0
Gross benefit Birr/ha	29,426.35	27,400
Net benefit Birr/ha	18,428.35	16,402

Source own data manipulation

Table 8. Production costs and value chain benefits.

Product items	Production cost Birr/kg	Market price Birr/kg	Net return Birr/kg
Split(kik)	24.00	35.00	11.00(45.8%)
Powder (shiro)	24.8	40.00	15.20 (61.3%)
Food (Shiro)	120.00	200.00	80.00 (66.7%)

Source: own data manipulation

Production-related challenge: faba bean productivity is below the potential due to low investment, especially chemical fertilizers, pesticides, and improved seeds. Poor agronomic practices like application of appropriate seed and fertilizer rate, time of planting, poor weed management habits, and lack of proper drainage practices, also affected the productivity of faba bean. The volume of supply, farmers' involvement in production, and area coverage by faba bean become declined. This resulted from increasing faba bean gall disease risk and African ball worm insect pest infestations, high input cost, limited availability of improved seed, frost, and weak seed supply system for pulse crops in general and faba bean in particular also contributed to shortage supply and poor quality produce.

Knowledge management and technology transfer related challenges: The number of improved varieties introduced to the areas and the number of growers indicated there is limited awareness and familiarity with the available varieties and low level of the farmer to farmer seed exchange systems hindered the technology transfer effects to improve the productivity of barley and faba bean. The low level of technology adoption of the improved varieties and weak market linkage and poor partnership among the actors were also contributed to the level of productivity.

Aggregation and trading: Both the supply and demand sides of produce marketing and distributions affected the value chain of faba bean in the study areas. The produce supply and marketing were severely affected by the supply side constraints of poor quality, low quantity, and seasonal shortage of the produce. This affected the sustainable flow of the products along the value chain. This further loosed the actor's interactions in the value chain. Seasonal supply variation of the grain also limited the continuous flow of the commodities. The limited involvement of farmers' cooperatives in the value chain contributed to the difficulties**.**

CONCLUSION

Faba bean is one of the major crops grown in the study areas and occupied a considerable share of farmlands. Low productivity of faba bean resulted from low agricultural investment and improper agronomic practices of low input of fertilizer application, lack of disease-resistant improved faba bean varieties, poor drainage, and weed management practices. Various actors are involved in the production and marketing of faba beans. Price fluctuation throughout the year affected its sustainable supply. Faba bean production and supply trends declined due to disease and insect pest infestations. Processors earned a high rate of returns from faba beans and had high market governances compared to smallholder farmers. Retailers have a high market governance role in which a large volume of faba bean is transacted through these value chain actors. The need to enhance partnership linkages between value chain actors will smoothen the value chain processes of faba bean. Providing sustainable and adequate market access and information to the farmers is important to improve the farmers' awareness. Strengthening the linkage of farmers and other value chain actors will contribute to full fill actors'

interest in benefit maximization. Generate technologies to reduce faba bean gall disease and insect pest damages. Reduce high market governance of traders and processors to motivate smallholder farmers for production and supply improvements.

Acknowledgments

The researchers would like to thank USAID-ICARDA for ultimate financial and capacity-building support, Debre Birhan Agricultural Research Center, and concerned researchers, Bassona worena and Tarmaber woreda office of agriculture and respected value chain actors for their participation, coordination, and host farmers who donate their valued time with willing participation for data collection and responses.

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