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Horticulture value chains in Ethiopia: Opportunities for better nutrition and new market access?

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1. Introduction

Vegetables play a central role towards meeting food and nutrition security in Ethiopia. However, the production levels of vegetables are still far below their potential (Haji, 2007). Vegetables took up about 1.18 % of the area under all crops at national level. Vegetables contribute 2.0% of the total volume crop production (CSA, 2014). Vegetables are the most important source of micronutrients and are essential for a balanced and healthy diet. Diversifying and increasing horticultural production can help to overcome malnutrition and poverty by augmenting household consumption and also create new market opportunities for smallholders. Moreover, vegetable value chains can offer new income and employment opportunities in trading and processing sectors (Ganry et al., 2011; Parrot et al., 2011; Virchow, 2014).

Public research on horticultural technologies is negligible and major public policies and attention of extension agents were mainly focused on staple crop production so far (MoFED, 2010). However, based on growing demand for vegetables especially in the major cities, the horticultural sector is gaining importance in the country and intensification is slowly starting to take place (Wiersinga and de Jager, 2009). To improve the nutritional status of the population and accelerate other positive development impacts, pathways and strategies for sustainable intensification need to be identified for vegetable value chains in Ethiopia. The objectives of this paper are to analyze vegetable value chain and examining the performance of actors in the chain as well as to assess and analyze the challenges and opportunities of vegetable production, marketing and consumption.

2. Material and Methods

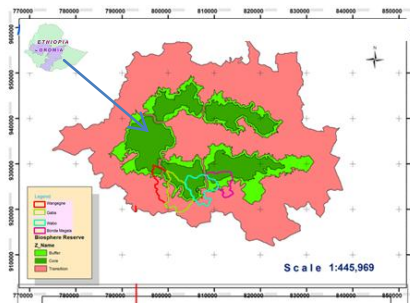
2.1. Description of the study area

The study was undertaken in Yayu and Hurumu districts (Woredas). These districts are part of the Yayu biosphere reserve area (Fig.1). The biosphere reserve of Yayu forest is a biodiversity hotspot and is home to a wild gene pool of Coffee Arabica (Tadesse, 2003). The reserve has a total of six Woredas and thirty five kebeles (ECFF, 2015).

2.2. Research approach, data source, and analytical methods

This study uses a nutrition-sensitive value chain approach to analyze vegetables value chain in Yayu biosphere reserve. The data were collected from both primary and secondary sources. The primary data for this study were collected from vegetables value chain actors i.e., four farmer groups, 13 traders, 3 input suppliers, 11 consumers (including restaurants) and 7 experts and 2 development agents using semi-structured questionnaire. Secondary data were collected from both published and unpublished sources. Descriptive statistics and marketing margin analysis have been used to analyze the data collected from various value chain actors.

Fig1: Yayu Biosphere Reserve, Oromia Region, Ethiopia



3. Results and discussion

3.1. Vegetable value chain

The primary actors in vegetable value chain in Yayu and Hurumu woredas are input suppliers, farmers, traders and consumers. Each of these actors adds value in the process of changing product title. Some functions or roles are performed by more than one actor, and some actors perform more than one role. Supporting actors are those who provide supportive services including training and extension, information, financial and research services. According to Martin *et al.* (2007), access to information or knowledge, technology and finance determines the state of success of value chain actors. Office of agriculture (OoA), primary cooperatives office of irrigation and health extension are main supporting actors who play a central role in the provision of such services.

3.1.1 Input Suppliers

For major vegetables produced in Yayu and Hurumu Woredas, the majority of the producers buy seed from private traders. Private trades supply the seeds of onion, cabbage, carrot, beetroot and tomato. They buy seed from Jimma, Metu and other traders in their vicinity. They sell the seed of vegetable together with other consumable goods. There is no specialized seed supplier in the study area. Due to the seasonal nature of improved seed business, input suppliers do not want to specialize on seed business.

The Office of agriculture and irrigation also provide seeds to farmers. The seed from office of agriculture is cheap and of good quality but not available on time, which is why farmers buy seeds from traders. Seeds from traders are past their expiry date. The cooperatives do not supply the seeds of vegetables but the cooperatives deliver improved seed of maize

Primary cooperatives are the main supplier of inorganic fertilizers for farmers in the study area. Cooperatives get fertilizer on time from union. Chemicals are not supplied by cooperative.

3.1.2. Producers

Vegetable production in Yayu region is relatively diverse. The major vegetable crops grow in the study area are beetroot, lettuce, carrot, spinach, tomato, ginger, shallot, onion, garlic, E. Kale and Cabbage. All vegetables are produced with rain-fed system except tomato due to disease problem. E. Kale and Cabbage are the first and the second most crops in terms of area coverage during rainy season, respectively. Cabbage, carrot, beetroot and tomato are in order of production in irrigation system. Farmers grow vegetable crops in homestead and irrigation areas. E. Kale is produced in on-farm area intercropped with maize. Species are produced under coffee but it is not possible to produce vegetable. The main source of knowledge and skill to produce vegetable is office of agriculture (development agents). Farmers also learn from each other (visiting model farmer) about vegetable production.

Farmers revealed that the production trend of vegetables is increasing because farmers learned about the benefits of vegetables (food, health and income source). But the productivity of some vegetable is decreasing due to disease.

Farmers use few inputs for vegetable production. Improved seed is one of the major inputs that are used by farmers for vegetable production. But farmers do not get quality seed. In general, farmers do not use organic fertilizer for vegetable production in their backyards. But they use manure and compost for vegetable production. Some farmers are using fertilizer for vegetable production in irrigation and wet land system. But the intensity level of fertilizer use is very low due to high price of fertilizer. Due to unavailability of pesticides, farmers do not use any chemicals for vegetable production. Farmers do not have access to credit for input vegetable production.

Farmers sell their vegetables to urban consumers (mostly), assemblers (collect from home), neighbor (who do not produce e.g. E. Kale), retailers and hotels owners at market place. Market outlet preference of men and women are different men prefer to sell to collectors. This is because it decreases transport cost and time. On other hand, women prefer to sell to consumers to get a good price. Farmers sell vegetables at village level for assemblers and neighbors (local people), Yayu and Hurumu markets and exchange each other. Farmers know the price of vegetables by visiting market places, asking other friends/ farmers, based on previous day or previous week price, and based on demand and supply. Farmers sell at village level based on last week price.

3.1.3. Traders

Analysis of the collected information identified six main vegetables marketing channels. The channels consist of different market actors such as producers, vegetables buyers at village levels, traders (collectors), brokers, distributors and retailers. The results showed that the shortest marketing channel is channel one (producers to consumers). Female farmers prefer to sell their vegetables through channel 1 and male farmers prefer to sell their product through channel 2. This is because it decreases transport cost and time. On other hand, women prefer to sell to consumers to get a good price.

Channel 1= Producers (Yayu area)=>Consumers (village level)

Channel 2= Producers (Yayu area)=>Collectors (Village level)=>Consumers

Channel 3= Producers (Yayu area)=>Retailors=>Consumers

Channel 4= Producers (other areas)=>Traders(other area)=>Distributors (Yayu area)=>Retailors=>Consumers

Channel 5= Producers (other areas)=>Traders(other area)=>Brokers (Yayu area)=>Retailors=>Consumers

Channel 6= Producers (other areas)=>Traders(other area)=> Retailors (Yayu area)=>Consumers

3.1.4. Consumers

Consumers are those purchasing the vegetable for consumption. Two types of vegetable consumers are identified in the study area: households/private consumers and restaurants. Consumers buy vegetable directly from traders (retailors) and farmers. Consumers purchase vegetables from local market during market days and from permanent shop on other days (during non-marketing days). Supply of vegetable by farmers is seasonal and very low, so that consumers cannot find the vegetables they would like to consume at all times and thereby consumption patterns are determined by the seasonal availability of vegetables. Hotels/restaurants purchase vegetables from respective market of Hurumu and Yayu. Some hotels from Yayu area also buy vegetable from Metu and Bedele markets. They buy lettuce, spinach and green bean from Bedele, Metu, Jimma and Addis Ababa. They buy vegetables from traders and farmers. Farmers mostly supply vegetable during fasting period. They visit market three days per week to get fresh vegetable product.

3.2 Marketing Margin

Gross marketing margin analyses indicate that 50, 55, 50, 23.1 and 27.3 % of the total marketing margin are added to onion, tomato, cabbage, garlic and ginger prices when they reached to consumers (Table1). The marketing margin can be decreased by producing vegetable in Yayu area. It can also enhance the consumption of vegetable by decreasing marketing margin and thereby bring nutrition security in yayu area. Of the marketing margin of vegetables, distributors absorb a higher proportion of the total margin.

Table 1: Average price and margins at various levels of chain actors

Prices/costs	Onions (from Woreta) in Birr/kg	Tomato (from Mekie) in Birr/kg	Cabbage (from Masha) in Birr/100 units	Garlic (from Naziret) in Birr/kg	Ginger (from Yayu) in Birr/kg
Farm gate price	6	8	250	50	40
Trader (collectors)	8	10	270	53	-
Distributor	10	12.2	325	55	45
Retailer	11	15.5	425	60	50
Consumer	12	18	500	65	55
Type of marketing margin	Gross marketing margin (%) Onion	Gross marketing margin (%) Tomato	Gross marketing margin (%) Cabbage	Gross marketing margin (%) Garlic	Gross marketing margin (%) Ginger
Total Gross Marketing Margin	50.0	55.6	50.0	23.1	27.3
Margin Trader	16.7	11.1	4.0	4.6	-
Transport costs	16.7	12.2	11.0	3.1	9.1
Margin Distributor	8.3	18.3	20.0	7.7	9.1
Margin Retailers	8.3	13.9	15.0	7.7	9.1
Margin Producers	50.0	44.4	50.0	76.9	72.7

Source: own survey.

3.3 Challenge and Opportunities of vegetables production

3.3.1. Major constraints of production, marketing and consumption of vegetables

The study identified different constraints related to vegetable production. The major constraints are: lack of nutrition-sensitive farming system, animal damage, pest and disease problem, high cost of seed, lack of high quality of seed, unavailability of chemicals, seasonal constrained production systems, competition with cash crops, lack of research and extension supports, low productivity, low awareness about vegetable crops, low price of output after harvesting and unavailability of improved technology.

Major constraints related to vegetables marketing are: low volume supply, seasonal unavailability of vegetables, fluctuation in price, problems with storage, processing and packaging (lack of post-harvest handling), lack of market place (shade), distance from market places and shortage of capital. Specifically, women also encounter some challenges in vegetable marketing such as shortage of market place and thereby women exposed to sun.

Lack of awareness for nutritional issues, reluctance to consume indigenous vegetables, low purchasing power, high price of vegetable and low supply of vegetable are identified as the major constraints related to vegetable consumption.

3.3.2 Opportunity for production, marketing and consumption

There are ample opportunities to vegetable production at different stages in the value chain Major opportunities include:

- Strong political will in the promotion of horticultural crops and irrigation : the government has given emphasis to horticultural crops and irrigation in the second growth transformation plan (G
- Conducive agro-ecology: The climatic and edaphic conditions of the study areas are within the range of the requirements of most horticultural crops growing environment
- High demand for vegetable in the study area
- Potential for intensification of vegetable production
- Existence of underutilized different vegetable crops in the study area
- As agricultural chemicals are hardly used there is a possibility for niche market exploitation under the brand name of organic produce

4. Conclusions and Outlook

This study identified some of the dynamics, potentials and constraints of vegetable value chain development in Yayu region. We identified that highly demanded vegetables are supplied through imports from other regions of Ethiopia because the local supply is low. Different recommendations are drawn from this study. To start with, dissemination of modern input technologies is essential in increasing the productivity of vegetables. Given that farmers are small-scale and unorganized in the study area, this state of affairs clearly needs strong government intervention. Not only does it require providing input facilities, but also their dissemination to ensure optimal access. Effort should also be made to strengthen farmers' cooperative and encourage collective action of farmers to lower transaction costs to access inputs.

There is a need to strengthen nutrition-sensitive extension services in the study area to increase vegetable supply to the market. Increasing the production and productivity of vegetables per unit area of land is a better alternative to increase marketable supply of vegetables. Introduction of new and improved varieties, modern vegetable technologies, controlling disease and pest practices should be promoted to increase production.

It is very important to increase farmers' awareness about vegetable production and marketing, postharvest handling, and storage infrastructure. In order to motivate lead farmers and bring more farmers in to the production of vegetable crops, a cluster based vegetable production in which farmers organize themselves under local level organization helps to a very great extent to decrease animal damage. When clusters are formed, member farmers take care of their farms based on their agreed norms. Strengthening the supportive activities such as input supply systems would also boost vegetable supply. In addition, changing traditional production practices and beliefs about vegetable through intensive social behavioral change strategies are of paramount importance.

There is a need to strengthen vertical and horizontal linkage between vegetable value chain actors in the study area. It is also important to use of nutrition-sensitive value chain approach for vegetable crop development.

References

- CSA (Central statistical agency) 2014. Agricultural sample survey for 2013 / 2014 cropping season. Report on Area and production of major Crops
- ECFF (Ethiopia Coffee Forest Forum) (2015). Annual report on Yayau biosphere area. Yayu
- Ganry, J., Egal, F., and Taylor, M. (2011). Fruits and Vegetables: a Neglected Wealth in Developing Countries. *Acta Horticultura* (921), pp. 105–110.
- Haji, J. (2007). Production Efficiency of Smallholders' Vegetable-dominated Mixed Farming System in Eastern Ethiopia: A Non-Parametric Approach. *Journal of African Economies*, 16(1), pp. 1–27.
- Martin G., O. Boualay and B. Julio, 2007. North Houaphanh bamboo value chain analysis. Netherland
- MoFED (Ministry of Finance and Economic Development) (2010). Growth and Transformation Plan (GTP) 2010/11-2014/15. Addis Ababa: Ministry of Finance and Economic Development of the Federal Democratic Republic of Ethiopia.
- Parrot, L., de Bon, H., Malézieux, E., Ganry, J. and Sotamenou, J. (2011). Peri-Urban Horticulture and the Agricultural Transformation in Africa: a Case Study in Cameroon. *Acta Horticulturae* 921, pp. 181–186.
- Tadesse, W. Gole (2003). Vegetation of the Yayu forest in SW Ethiopia: impacts of human use and implications for in situ conservation of wild *Coffea arabica* L. populations. *Ecology and Development Series* 10, 2003, Cuvillier Verlag Göttingen.
- Virchow, D. (2014). Small-scale vegetable production and marketing systems for food and nutrition security: Challenges and prospects for Southeast Asia. Presented at the SEAVEG 2014 Symposium on vegetable production and marketing, Bangkok, Thailand.
- Wiersinga, R. C. and de Jager, A. (2009). Business opportunities in the Ethiopian fruit and vegetable sector. Wageningen: LEI Wageningen UR. Online available: <http://library.wur.nl/WebQuery/edepot/3592>, Accessed on 30th of May, 2016.