Research Journal of Finance and Accounting
ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.14, No.9, 2023

Assessment of Soybean Value Chain in North-Western Ethiopia

Belete Woundefiraw[1]
Ethiopia Institute of Agriculture Research (EIAR), Pawe Agricultural Research Center

Welay Tesfay[2]
Ethiopia Institute of Agriculture Research (EIAR), Mehoni Agricultural Research Center
Corresponding Author: beletewound@gmail.com and welaytesfay@gmail.com

Abstract
Soybean is one of the industrial crops that have been given high emphasis on GTP II to enhance its production and productivity through improved soybean varieties development and/or adaptation with different management and agronomic practices. Although Soybean has plenty importance to enhance soil fertility, source of nutrient to human and animals, main source of income to smallholder farmers and traders at household level as well as main source of income and foreign currency to Ethiopian economy as whole, smallholder farmers complain about its lowest output price relative to its production cost, other pulses and oil crops prices. This is due to one kilogram of soybean price could not cover the cost of one kilogram of faba bean, chicken pea, grass pea and other beans that purchased for "wet" purpose by selling soybean outputs. This research investigated the major opportunity and challenges of soybean production and marketing along value chain actors using focus group discussion, key informant interview and desk review. Storable ability, required less organic fertilizer, used as input for oil and feed industries and ongoing to enter ECX among major opportunity whereas low output price, poor linkage along value chain actors, lack of certified seed multiplier, limited usage of newly released improved soybean varieties were among major challenges of soybean sector. Therefore to stimulate the soybean sector GO and NGO should be focused on the strong linkage between soybean producers and oil and feed industries, soybean marketing agents and soybean seed multipliers with price ceiling.
Keywords: Soybean, Production, Marketing Focus group and Key informant Interview
DOI: 10.7176/RJFA/14-9-02
Publication date: May 31st 2023

Introduction

In Ethiopia Agriculture is the backbone of Ethiopian economy which generated foreign currency, source of food for its rural and urban population, supplied raw material for domestic agro-industries like brewery, feed, food and oil factories. Due to these facts, Government of Ethiopia has been given high emphasis on production of industrial and food security crops which has high market demand, nutrient value and productivity potentials (Welay & Desalegn, 2019).

Soybean is one of the industrial crops that have been given high emphasis on GTP II to enhance its production and productivity through improved soybean varieties development and/or adaptation with different management and agronomic practices since 1950 in the Ethiopian Institute of Agricultural Research (EIAR) (Addisu Getahun, 2016). Pawe Agricultural Research Center(PARC) as part of the Federal Agricultural Research, it has been made huge efforts on developing, promoting and disseminating of improved soybean varieties in North western of Ethiopia for more than three decades and released nine new improved soybean varieties naming Wegayen, Gishama, Gizo, Pawe1, Pawe2 and Pawe3 varieties which played vital role on the enhancement of soybean production, productivity, generating income at household level as well foreign currency at country level. Awi and Metekel Zones are among the potential areas which produced soybean potentially, introduced and disseminated improved soybean varieties in Amhara and Benshangul Gumuz regional state respectively, North western Ethiopia. Since 1986 soybean becomes the main source of income and nutrient to smallholder farmers, consumers, assemblers, retailer and whole seller in North western Ethiopia. During 2018/19 cropping season, more than 30,000 smallholder soybean producers were cultivated 55,317 ha of land and produced 1, 472,452 quintal soybean outputs in North western Ethiopia. Smallholder soybean producers were earned 17.67 million Ethiopian birr (ETB) of gross revenue by selling their soybean outputs at produce price in the same cropping season.

Market played crucial role on creating new agricultural product, employment opportunity across the value chain and generating income at household level. It also encourages small holder farmers to produce soybean product and contribute their role on generating of income and foreign currency for the country since it is exportable crop. Supporting the existing soybean market and developing new soybean market approach is crucial to benefit smallholder farmers as well as the whole chain actors. Hence, investigating the current soybean production and marketing approach and developing alternative marketing approach is crucial to benefit the smallholder farmers

[1] Ethiopia Institute of Agriculture Research (EIAR), Pawe Agricultural Research Center
[2] Ethiopia Institute of Agriculture Research (EIAR), Mehoni Agricultural Research Center

as well as the country as whole. (Addisu Getahun, 2016) Was conducted research in different part of the country point out the importance of market access of smallholder farmers.

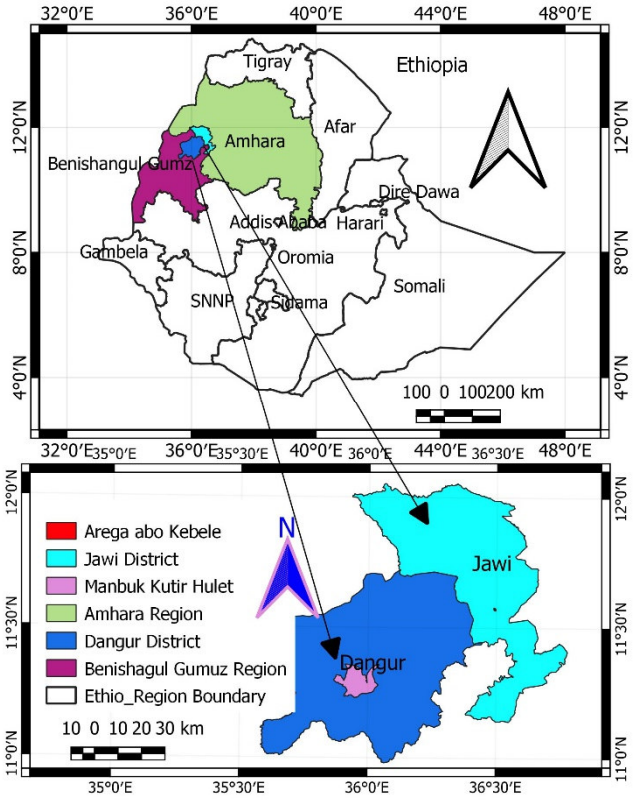
Although Soybean has plenty importance to enhance soil fertility, source of nutrient to human and animals, main source of income to smallholder farmers and traders at household level as well as main source of income and foreign currency to Ethiopian economy as whole, smallholder farmers complain about its lowest output price relative to its production cost, other pulses and oil crops prices. This is due to one kilogram of soybean price could not cover the cost of one kilogram of faba bean, chicken pea, grass pea and other beans that purchased for "wet" purpose by selling soybean outputs. Therefore, investigating of production and marketing of soybean, developing of soybean value chain and alternative market option is necessary with the aim of developing value chain map, identifying major actors and their roles, identifying major opportunity and constraints of soybean value chain as well as to recommend possible value chain options to benefit smallholder farmers, chain actors as well as the country as whole (Welay, 2021)

Research Methodology

Description of the study area

The study conducted in Dangur district, Metekel zone Benshangul Gumuz region, North Western Ethiopia. The district is found at 570 Km to North Western direction far away from Addis Ababa with geographical location at $36^0$29'46.40'' longitude and latitude of $11^0$17'03.90''. It covers an area of 838,700 hectare with estimate population of 70,387(51.13% male) inhabitants (DDAO, 2018). The farming system of the district is characterized as mixed crop-livestock farming system dominated by cereal and pulses crops. Among the pulses, Groundnut takes a lion share in terms of production and area coverage (CSA, 2018). Dangur district is bounded in East by Pawe district, in South by Bullen, in West by Guba districts and in North by Quara and Jawi districts. It is characterized as warm humid low land area with high rain fall. The district has 29 kebeles and out of these kebeles 26 are groundnut producers. The climate of the area is hot humid and characterized by unimodal rainfall pattern with high and heavy rainfall that exceeds from May to October. The area receives mean annual rainfall of 1250 mm and its altitude ranges from 800 to 2731 m.a.s.l with mean annual temperature of 16^0c to 380c which ranges 12^0c to 40 ^{0}c Dangur district agricultural office (DDAO, 2018).

Jawi is found at 602 Km to North West direction far away from Addis Ababa with geographical location at 36029'17.58'' longitude and latitude of 11033'22.68''. Fendika is the capital city of Jawi district. It covers an area of 515,400 hectare with estimate population of 122,259(53.08% male) inhabitants (JDAO, 2018). The farming system of the district is characterized as mixed crop-livestock farming system dominated by cereal and pulses crops. Among the pulses, soybean takes a lion share in terms of production and area coverage (CSA, 2018). Jawi district is bounded in East by Dangla district, in South by Dangur and pawe district, in West by Quara districts and in North by Alefa Taqusa district. It is characterized as warm humid low land area with high rain fall. The district has 25 kebeles and the climate of the area is hot humid and characterized by unimodal rainfall pattern with high and heavy rainfall that exceeds from May to October. The area receives mean annual rainfall of 1250 mm and its altitude ranges from 700 to 1500 m.a.s.l with mean annual temperature of 160c to 320c which ranges 120c to 40 0c Jawi district agricultural offices (JDAO, 2018)



Data source (Sampling technique)

The study conducted focus group discussion 8 up to 12 soybean producers at Jawi and Dangur districts with focus group discussion, key informant interview with Agricultural experts, soybean researchers, marketing experts and ECX Manage with deeply document review.

Table 1. Method of Searching Qualitative data

Sample data source		Metekel	Awi
Farm households (FGD)		1	1
Commercial farms		2	1
Traders/commission agents		7	3
Coops/unions		2	1
ECX		1	
Mistry of trade		1	1
Ministry of agriculture	Experts	2	1
	Development agents (KII)	2	2
Input suppliers			1
Microfinance institutions		1	

Data type and collection methods

The sampling frame for the study was soybean producing and marketing population in the locations under consideration. Farmers for focus group discussion were selected randomly from the sample frame using simple random sampling technique. Actors in soybean value chain were selected randomly in collaboration with *Zone*, *Woreda* and *Kebele* experts. The actors include input suppliers, traders, coops, processors, NGOs, and etc.

Both qualitative and quantitative data was gathered for the study. Qualitative data was collected from the sampled zones, districts and kebeles using key informant interview (KII) and focus group discussion (FGD). On other hands, both primary and secondary data was collected and compiled. Primary data was collected from sample respondents (actors) using checklists. Secondary data was collected using desk review. The major data collected for the study was farmers' access to land, labor, inputs, credit, extension services, markets and technology/inputs/, farmers soybean production practices, technology use, harvesting and post harvesting issues and agricultural output transporting, marketing, processing, consumption and value addition issues. Soybean supply chains, market outlets, market share and market chain, major constraints and opportunities in soybean production and marketing was also collected.

1.2. Method of data analysis

The qualitative and quantitative data collected from value chain actors through focus group discussion and key informant interview was summarized using descriptive statistics. Constraints and opportunities of soybean production and marketing/trade was also summarized for all actors.

RESULTS AND DISCUSSIONS

Soybean Production in North western Ethiopia

Soybean production is estimated at 120,000 metric tons in 2020 (GTP, 2015). Growing local demand for cooking oil, soy-based foods, and livestock feed forced soya bean production to boast. Future production is expected to continue its upward climb to respond to rising consumer demand. Soybean production has more than tripled from 35,000 metric tons in 2011/12. Most of this growth in production was due to an increase in the area planted. Besides, recent increase in price motivated farmers to expand the soya bean production.

In the specified study areas farmers increased their land allocation for the soybean production. Accordingly, their technology usage regarding to soya bean production like fertilizer application, weeding practices, pesticides application, clearing and managing the field is improving from time to time. Following this, the productivity of soya bean is 1.5 to 2.0 ton/ha which is less than the national average of 2.1ton/ha. Most farmers do not use inorganic fertilizer and the main reasons are they believe that their land is fertile and it demands additional labor.

Based on agricultural office of Metekel and Awi-Jawi districts, the amount of soya bean produced was 739,040.2qt and 733,410 qt for the year 2018/19 production season respectively. Soya bean is also produced by agricultural investors operating in these regions. In 2018/19, 28,497Qt of soybean was produced by three investors in Metekel & Awi zones. Soya bean production in Metekel and Awi zone exceeds the national average of 812,420 and GTP target. It implies the country does have big potential for soya bean production and in the near future, it is expected to be one of the largest producers of soya bean in Africa.

Table 2. Soya bean production for 2018/19 cropping calendar

No.	District	Area coverage in ha	Soybean Production in quintal	Amount of soybean sold in Quintal	Remark
1	Dangur	26,095	536, 101	385,101	Benishangul Gumuz
2	Bullen	758	17,212	11,704	
3	Dibate	23	467	303	
4	Mandura	2,027	50,592.5	36,592.6	
5	Pawe	7,109.6	122,973	92,229.75	
6	Guba	592.75	9,813.2	6,574.85	
7	Wombera	99	1,881	1,128.6	
8	Jawi	18,613	733, 412.75	542,725.45	Amhara
Total		**55,317**	**1,472,452**	**1,076,359.25**	

Source: Metekel zone & Jawi ARDO (2020)

Characteristics of Respondents'

Now a day soy bean production is very common in different part of Ethiopia particularly Benshangul Gumuz. Among Benshangul Gumuz zones' Metekel zone is one of the potential and favorable to produce soybean. Metekel zone is a low land and warm humid weather condition that favorable to produce soy bean crops. It was produce in the zone for the last two decade extensively. Government organization takes the responsibility to innovate new variety that has high productivity ability and disease tolerance like TGX and Belesa 95. Agriculture office at different level collaborated with Research center to disseminated new variety popularize, scale up and scale out of the new variety as well as to fill the gap of seed demand in Metekel zone.

Even if soy bean was produced extensively in the zone for the last two decade, the soy bean sector has a lot of problems related to production, consumption, and transporting, marketing problems. To identify these problems focus group discussion (FGD) and key informant interview (KII) was designed and conducted in Dangur and Jawi districts.

Composition of the Focus discussion groups in Dangur district

The focus group members' were selected based on their experience on soy bean production in the last decades. The group members contain eight and all are male headed households'. Ages of the group were ranges from 29 years old up to 70 years old with a mean of 40.13 years old. Education level of group members were three not able to read and write while five of them were able to read and write that were ranges from zero class up to 4 classes. Except one of them they were able to remember their phone number without seen their cell-phone. Experience of group members on soy bean production were ranges from 3 years to 12 years old with average experience of 6.25 years. During 2017/18 cropping season the group member cultivated 17 ha and produced 252 quantal of soy bean.

Group member cultivated minimum 1 ha up to 7 ha with mean of 2.13 ha. Group members' Production of soy bean ranges from 9 quintal to 95 quintal with a mean production of 31.5 qt. Among the group member the one who gained 13 quantal of soy bean per hectare said that "the reason that gained minimum production was, during the maturity stage my production was eaten by bird too much". On contrast among group member who gained 70qt per 5 ha said that "My cultivated land was virgin and fertile, even it does not give me as it was growing and looks like".

Composition of the Focus discussion groups In Jawi district

The focus group members' were selected based on their experience on soy bean production in the last years. The group members contain nine all are male headed households'. Ages of the group were ranges from 25 years old up to 56 years old with a mean of 37.56 years old. Education level of group members were six not able to read and write while three of them were able to read and write that were ranges from zero class up to 7 classes. Except one of them they were able to remember their phone number without seen their cell-phone. Experience of group members on soy bean production were ranges from 3 years to 11 years old with average experience of 5.11 years. During 2017/18 cropping season the group member cultivated 10.5 ha and produced 189.6 quintal of soy bean. Group member cultivated minimum 0.5 ha up to 2 ha with mean of 1.17 ha. Group members' Production of soy bean ranges from 9.6 quintal to 45.6 quintal with a mean production of 21.07 qt. the focus group discussion participants(FGDP) said that " Natural hazard was affected their Soy bean production during the cropping season". 66.67 %(6 out of 9) FGDP told that our soy bean production was decreased due to snow rain.

Trend of Actors and Institutions of supporting soy bean production

Soy bean production needs special integration within the producers and supporting staff to produce at its potential and marketing at appropriate producer price as well as to benefit the primary producers. Soy bean as one of cash crops it has many stakeholders' and supporting staffs should integrated and work collaborated to success soy bean crop as a sector.

Agricultural Office Role on soybean production

Among the key supporting sector District Agricultural office is one of the supporting staff by facilitating to supplying of fertilizer, supply seed, access of market information, Agronomic information, credit, technical advice and training. District and kebele experts were provided different services to soy bean producers during the 2017/18 cropping season. Among the service provided were supplying of fertilizer, supply of seed, and access to market information, Agronomic information, credit, technical advice and training

Among these services facilitating of market information, access to credit special for Muslim community and training was weak linkage within the primary producers. The main obstacle to access credit for Muslim community is religious related problem. Among the group member said that "we need credit without interest that will pay its principal only later based on our agreement''. According to his thought this modality should supplied to Muslim community. In addition to this due to informal credit soy bean producers forced to sale their product after harvest immediately at low price to repay the informal credit. Train related on soy bean production methods and marketing system was weak linkage at 2017/18 cropping season. During the first introduction path there were a lot of training and supports related to soy bean production. However, it decreased from time to time. Market information was also weak during 2017/18 cropping season. No one facilitate to sale our soy bean product at EXC market or formulate modalities to sale directly to terminal markets.

During 2017/18 cropping season Agricultural office play big role on supplying fertilizer, seed and agronomic information and technical advice to soy bean producers. Demand of fertilizer and seed were identified and collected during the off season. Based on the identification and collected demand of fertilizer and improved seed variety, fertilizer and seeds were distributed to the producers. More or less it was medium service.

During the cropping season Agronomic information and Technical advices were given to producers. At kebele level there were different demonstration practices at FTC and Model farmer levels. Farmer experience sharing was conducted at kebele level on TGX and belesa 95 variety. But there was not continuous mentoring and evaluation and did not address far area from center of kebele.

Research Center Role on soybean production

Soy bean production could be increased by using different technology methods. Some of them are using new productive and disease tolerance variety, sowing by row, using recommended fertilizer and seed, using appropriated agronomic practices. Research center give high priority on new variety release in cereal and oil crops particularly soy bean crop in the study area. Among the newly released varieties were pawe1, pawe2, pawe3, TGX and Belesa 95. These varieties were disseminated and used by the soy bean producers to increase their production and productivity levels. Research center was strong linkage on Generation of innovation, technology and providing trainings.

In addition this research center organized pre extension demonstration and stakeholder conductive meetings. This is give good opportunity to soy bean producers to select appropriate variety to their particular land. Among group members said that " TGX or "Achiru" is suitable for clay soil type and started seed at the bottom level where as belesa 95 or "rejimu" is suitable for red soil types''. Research center try to link soy bean seed producers with other seed demanders. But it is weak to link others soy bean producers on oil factory and terminal markets.

Cooperative Role on soybean production

District cooperative has been delivered improved seed, fertilizer as well as has been bought soy bean products as appropriate price to link producers with terminal markets. Among the services input market service and information was better service during the cropping season. According to FGDP the services provided by cooperative was weak linkage with beneficiaries. Except input market service and information all services (output market service and information, Processing service and information, facilitating and collection soy bean production and financial service linkage) have been provided by cooperative were weak. The reason behind is that cooperative has not been organized very well in terms of skill human power as well as financially.

The Role of Marketing Agency, University/colleges, Seed enterprise, Processor and Exporters

Marketing Agency, Nongovernmental organization, Universities, seed enterprises exporter and processors expected to support massive role on the soy bean production and productivity. Unfortunately NGOs, university, formal seed enterprises, processors and exporter were completely absent near the study area. As result that all service that has been expected to deliver was not delivered during 2017/18 cropping season.

Role of Informal Seed suppliers

Many farmers prefer to buy seed from relative and neighbor farmers.

Among focus group members one member said that "i sold 20 qt of soy bean product for seed''. This is due farmer to farmer experience sharing conducted at my soy bean farm during 2017/18 cropping season and farmer prefer my product and asked to sell for seed. Many of Soy bean producers prefer informal seed source to buy easily without many in governmental seed supplies.

The role of Agro-service dealers

In the study area, it is common buying and selling of agro-chemical supplier with many formal traders in the near town of Manbuk. The traders buy from terminal and National markets and supply to soy bean producers as well as to the whole the district smallholder farmers.

According to the focus group discussion participants assured that they buy agro-chemical from the district traders. Their preference were Glay phosit chemical or ''metro geday''. According to the participants Not only preference but also bought and spraying the chemical after one ploughing to eliminate existing weed and growing of new weeds. The agro dealers were relatively medium support to the soy bean producers by supply and giving of oral advices during 2017/18 cropping season. However, agro dealer were not support in providing of training, providing credit on agro-chemical at all.

The role of traders on soy bean producers

Dangur district is among the potential soy bean production in Metekele zone. The district leads from the seven district of Metekel zone in terms of soy bean producers and area coverage in During 2017/18 cropping season. Many of traders stared their business based on their districts potential. Formal traders in district only support in terms of purchasing soy bean grain, informal credit service for the purpose of to sell his product to himself. However, formal traders were not provide service to soy bean producers in terms of providing information, contract agreement on grain supply, facilitating market linkages for the benefit of soy bean producers and identification of potential markets.

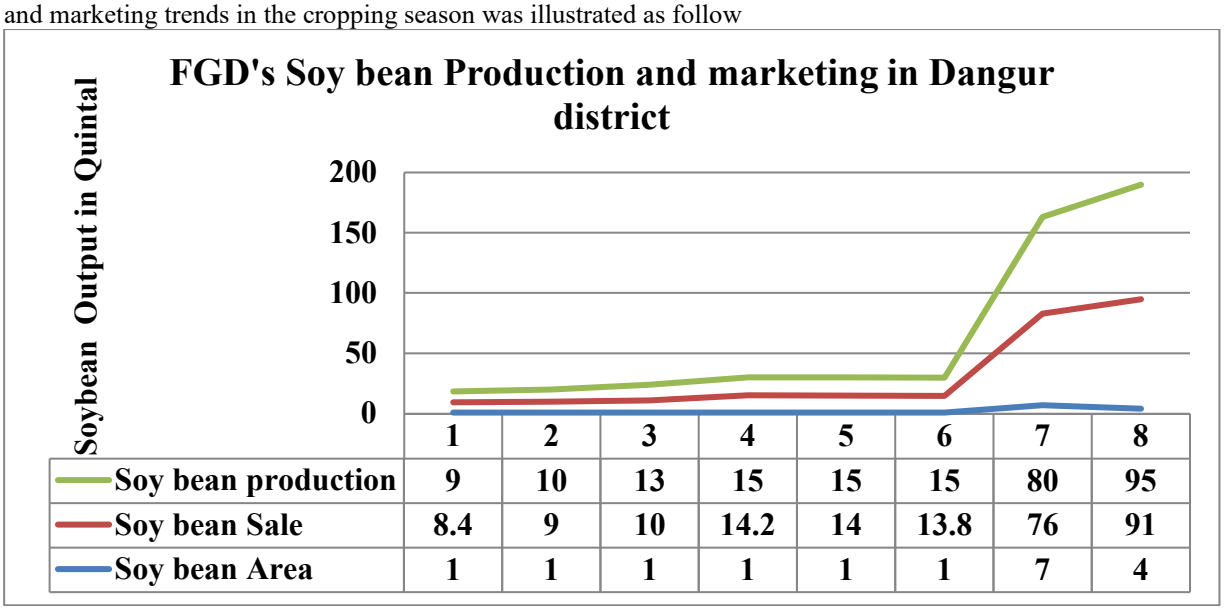
Availability of Infrastructure in study area

Focus group participants agreed that most of infrastructure has been paved and installed at District levels. However, at kebele level there is only temporary road that functioned at winter season. Electricity, mobile network, Farmer training center, market place and storage facilities were there. Among the FGP participants said that "Two of them have private storage facility for their soy bean product"

Production and Marketing of Soy bean in Misreta kebele

Soy bean production was started since 1998. Soy bean was introduced to the kebele by collaboration of Dangur District Agriccltural office and Pawe research center. During that time price of soy bean was 1.5 birr per kilo. Even there was not demand of soy bean products District, terminal and national markets. Among the FGP said that "I have been sold my soy bean product for chicken feed at 1.5 birr per kilo".

The productivity of soy bean in Misreta kebele was ranges from 15qt/ha to 20qt/ha During 2017/18 cropping season. The producers sold their soy bean product 76.92 up to 100%. They left 0% - 23.08% of their products for seed based on their products purity. Even they sold their product 100% if they were untrusted about their products purity and bought seed from other farmers or Governmental organization. According to the FGP they have been produced 252 quintal of soy bean during 2017/18 cropping season. Out of 252 quintal 237.2 quintal of soy bean products have been produce and 237.2 quintal (94.12%) were sold in the district and farm gate market levels during the cropping. Seven out of the eight participants' left 14.8 quintal (5.87) of seed for following year. According to participants of FGD, even if they have experience of consumption of soy bean products in "Dabo, Kollo, Wot, and injera".forms they were not consumed at all during the cropping season. Only one participants said that "I plow two times including plating" the rest ones (87.5%) of FGD participants have been plowed only once including planting. The land rented in from Gumuz peoples for soy bean was virgin and fertile. . FGDP's soy bean production and marketing trends in the cropping season was illustrated as follow



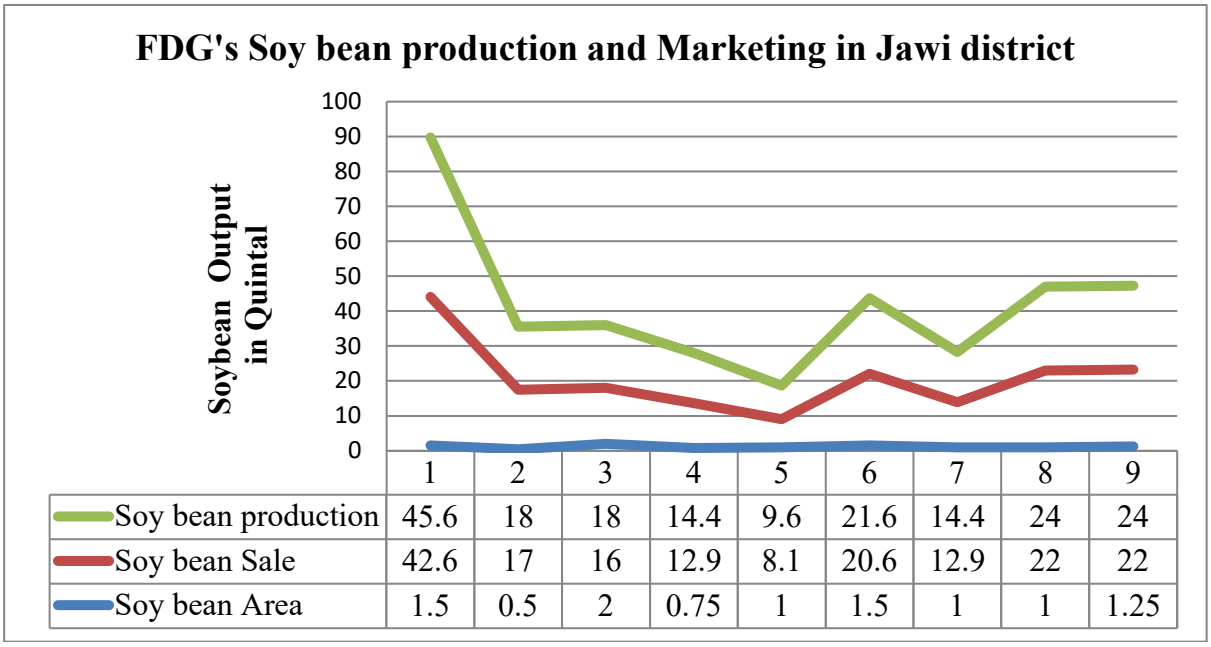
	1	2	3	4	5	6	7	8
Soy bean production	9	10	13	15	15	15	80	95
Soy bean Sale	8.4	9	10	14.2	14	13.8	76	91
Soy bean Area	1	1	1	1	1	1	7	4

Fig1 Soy bean production and marketing in Dangur district

Production and Marketing of Soy bean at Argabo kebele Jawi district

Soy bean production was started since 2008. Soy bean was introduced to the kebele by collaboration of Jawi District Agricultural office and Pawe research center. During that time price of soy bean was 4 birr per kilo. Even there was not demand of soy bean products District, terminal and national markets.

The productivity of soy bean in Argabo kebele was ranges from 8 qt/ha to 30qt/ha During 2017/18 cropping season. The producers sold their soy bean product from 84.38 up to 95.37%. They left 4.63% - 15.62% of their products for seed based on their products purity. Even they sold their product 100% if they were untrusted about their products purity and bought seed from other farmers or Governmental organization. According to the FGP they have been produced 189.6 qt of soy bean during 2017/18 cropping season. FGP have been produced 252 quintal of soy bean during the cropping and 174.10 quintal (91.83%) were sold in the district market levels. Nine participants' were left 15.5 quintal (8.17%) of soy bean seed for following year. According to participants of FGD, even if they have experience of consumption of soy bean products in "Dabo, Kollo, Wot, and injera".forms they were not consumed at all during the cropping season. All of the participants plough two times including planting, 100% plant in row, 100% of them used their own saved seed, they recognized soy bean were improved their soil fertility when they sow. soy bean improved soil fertility through decomposing of its leaf in the soil. They were used 60 up to 100 kg of seed per ha based on the seed size, planting method and soil fertility of cultivated land. FGDP's soy bean production and marketing trends in the cropping season was illustrated as follow



	1	2	3	4	5	6	7	8	9
Soy bean production	45.6	18	18	14.4	9.6	21.6	14.4	24	24
Soy bean Sale	42.6	17	16	12.9	8.1	20.6	12.9	22	22
Soy bean Area	1.5	0.5	2	0.75	1	1.5	1	1	1.25

Fig2 Soy bean Production and marketing in Jawi district

Soy bean seed rate and method of production

Row planting was not new for FGDP particularly row planting of major cereal and oil crops like maize, finger millet, sorghums, soy bean and groundnut. But due to shortage of labor during peak sowing period and demand to cover large cultivated land by cereal and oil crops farmers prefer broadcasting planting method.

Two of FGDP have been sown their soy bean land in row planting where as six of them (75%) have been sown in broadcasting planting methods. In addition to this three of FGDP or 37.5% were used improved seed soy bean variety from research center while the rest of them were used their own saved seed of soy bean. Both improved variety and own saved soy bean producers have been sown 65 kg/ha. According to their experience determined their sown period. When soy bean sown between June 20 to July 10, it give relative high yield. Besides sown of soy bean has high benefit on soil fertility improvement. 100% of FGDP assured that soy bean treated our land through improvement of Nutrients that needed by plants. Among the FGDP said that "soy bean improve soil fertility through fix nitrogen'' his answer was unexpected from farmers.

Gender Role of Soy bean production

Participation of gender on soy bean production depends on culture, location the farm land whether it is near or far, labor division like male must worked at field and women must worked home. Culturally and in tradition way of think Females considered as simple and homestead workers. Based on these reasons women participant only on soy bean production process of planting and weeding whereas did not participate directly on land preparation, harvesting, and threshing selling soy bean pesticide application. However, women participated on decision making of how much to sell when and where to sell and control over the income gained from the sold of soy bean by discussed with her husband. Youth has more half role in both activities of soy bean production process except decision making and income control over the gained income from soy bean.

Rate of inputs used for soy bean

Soy bean production and productivity can be increased through usage of recommended of DAP/NPS, Urea, Bio fertilizer, Compost/Manure Herbicides and Fungicide if disease has been occurred. According to FGDP except herbicide (100% used), all of members were not used (100%) all inputs like DAP/NPS, Urea, Bio fertilizer, Compost/Manure and Fungicide during cropping season. the reason why not used these input were their soy bean was virgin and fertile. Producers prefer pre-emergency herbicide method of weeding and 100% them were used this method due to high control not only on the existing weeds but also on new emergency weeds for present and following cropping seasons. 87.5 % weed their soy bean farm once due to using of pre-emergency weeding practices.

The main constraints of soy bean productions

Soy bean production faces different obstacles to produce effectively and efficiently. Producing the required output within the recommended of inputs and agronomic practice. Producing efficient soy bean product exhibits' the

producers as well as the country's economy as whole from additional inputs costs and increased his/her annual income. However, producing efficient product is not cinch activities due to human and natural factors. Especially smallholder soy bean producers used rain fed cropping season. According the focus group discussion the bottleneck of soy bean production was

- Lack of fair land distribution and certified cultivated lands.
- Lack of cultivated land. Gumuz peoples are the holder of the land by hereditary system
- Lack of certified private seed multiplier
- Lack of organic and inorganic fertilizer usage for soy bean production
- Limited usage of newly released soy bean improved varieties

The cropping calendar of soy bean production

Soy bean producers determined their sowing periods from June 20 to July 10 based on their experience. Normally this is in line with researcher recommendation of sowing period of soy bean. According the FGDP perception and practical experience the cropping calendar of soy bean production is illustrated with tick in the following table.

Table 3 Cropping Calendar of Soybean Production

Main Activities	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.
Land clearing								✓	✓			
First plough										✓		
second plough												
Third plough												
Sowing										✓	✓	
Fertilizer application										✓	✓	
Thinning										✓	✓	
Weeding											✓	✓
Harvesting		✓	✓									
Threshing				✓								
Marketing				✓	✓							
Low price				✓	✓	✓						
Medium price							✓					
High price								✓	✓			

The price of soy bean was fluctuated from 8 birr/kg to 17 birr/kg during 2017/18 cropping season. the minimum price was occurred during December and the highest price was occurred in may for one day only.

Access to extension service of soy bean producer

Soy bean producers how to produce, how many qt to produce for whom to produce with quality and quantity of soy bean needs great effort from governmental bodies. District agriculture office and research center try to deliver different training to capacitate skills and knowledge of soy bean producers. 37.5 % of the focus group discussion participants(FGDP) have been accessed to soy bean production, soy bean postharvest handling, seed production, expert follow up and participated in field days whereas 62.5 % of FGDP Have not been accessed to these services during the cropping season. More ever 50 % and 25 % of FGDP have been accessed to soy bean food preparation and extension materials like manual and leaflet. However, FGDP have not been accessed to input facilitation and Medias at all

Even though 50 % FGDP of soy bean producers have been trained on soy bean food preparation method, no one of them was used soy bean for consumption at Home during the cropping season. Among the FGDP said that "first it was our weakness". The main reason was it has sour taste when we use as food in terms of bread, "Kollo", and "injera ", Second training was given to men but women should be trained for the future.

Market segment of soy bean

Soy bean producers sold their soy bean product at farm gate and Mambuk town the capital city of Dangur district. According to FGDP producers prefer to sell their product for those whose traders lend money during planting period. Based on this they sold their products to Wholesale traders, temporary trader using Isuzu/car/ and cooperative respectively according to their importance. Temporary traders bought at farm gate level whereas wholesaler and cooperative bought at district and kebele level. Out of 237.2 quintal of soy bean sold during the cropping season, 154.2 quintal, 75 quintal and 8 quintal was sold to wholesalers, temporary traders and cooperative respectively. During the cropping season the market share of wholesalers, temporary traders and cooperatives was 65.01%, 31.62% and 3.37 % respectively. Soy bean producers try to negotiate with traders to set the price of their product. Producers seek price of soy bean from farmers, traders and even terminal market price of soy bean using phone. Even if they were set the soy bean price, they were force to sell due to debited credit before planting of soy

bean. According the FGDP 100% of them know the price of soy bean before sell.

Source of soy bean market information

Smallholder producers search the current market price of agricultural commodities through their personal observation, using their phone, from neighbor/friend who visited the last market day and customer traders. According the FGDP all of source of information was really reliable. On average the district market place of soy bean takes 25 to 30 minute. 75 % of FGDP grading their soy bean products before selling. This practice is common in order to sell relatively high price. Besides producers of good quality of soy bean have been gained premium 20% of price increment. 75% of FGDP have been got premium for their good quality of soy bean product during the cropping season.

Traders lend money to the soy bean producers from 1,000 up to 10,000 birr without interest rate in order to sell their soy bean products after harvest during the cropping season. They agreed each other informally at the growing stage of soy bean farm. The price of soy bean was increasing year to year staring 7 per kilo reaches 17 birr per kilo now.

Production of soy bean trends

Soy bean production has been increased up to now through the increment of allocated land for soy bean and management of soy bean field very well such as row planting, weeding and using herbicides. 100% of FGDP has been increased their soy bean production via the increment of allocated land for soy bean and management of soy bean field very well. However none of them have been used fertilizer for soy bean during the cropping season. 62.5% of FGDP argue that I will decrease soy bean production by little allocation of land to soy bean whereas 37.5% said that I could increase my production with expectation of increment of price. On the other side 62.5% of FGDP I will not change my production by allocate similar cultivated land for soy bean while 37.5 % said that I will changed my production status.

37.5% of FGDP prefer the variety of TGX and 37.5% of Belesa 95 whereas 25% were indifference between the two varieties according their farm land fertility. TGX demander indicated their preference criteria was it started fruit setting at the bottom plant.

Criteria of traders to buy soy bean product

Traders graded the soy bean product by their imaginary. First prefer relatively large size of soy bean product that did not mix with any crops and sand. Next prefers any product of soy bean that has not been broken seed, rust seed and wet seed. 100% of FGDP has been stored soy bean in private storage with expectation of price increment. Only one FGDP (12.5%) has been occurred loss of 0.5 quintal soy bean during the cropping season.

Processing and consumption of soy bean

100% of FGDP said that we did not know any soy bean processing factor. So it is difficult to sell our product to processing factor directly without knowing their address. Soy bean products have been sold at district and farm gate market level for local traders. A lot of trained have been given on food preparation of food from soy bean. 37.5 % of FGDP has been trained on preparation of Dabo, Injera, Kita, Kukus and Kollo from soy bean. Even if different efforts made, soy bean producers have not been consumed soy bean during the cropping season.

Major constraints of Soy bean production and marketing constraints

Soy bean production faces different production and marketing problem. FGDP prioritized these bottlenecks of soy bean production and marketing according their influence to the annual income.

Table 4 Problem analysis of Soy bean production and Marketing constraints

Problem ranking	Types of problem	Cause of problems	Effect of problems	Possible solution	Actors that will solve this problem
1	Lack investor participation on soy bean processing	Non–competitive price and shortage of edible oil	Decrease producers income and oil consumption	Investors should launch medium or large soy bean factory	Agriculture, Investor, transport and trade office
2	Lack Nearest soy bean plant	Non–competitive price and shortage of edible oil	Decrease producers income and oil consumption	Government should launch medium or large soy bean factory	Agriculture, Investor, transport and trade office
3	Harvesting machine	Postharvest loss of soy bean	Decrease standard and price of soy bean product	Introduce soy bean harvesting machine	Private investor and cooperatives
4	Lately seed supply and off season training	Inaccessible to improved variety and agronomic practices , Exposed to birds	Decrease soy bean yield and food security of HHs	Timely supply improved variety and conduct off season training	Agriculture, cooperative and research centers
5	Labor shortage				
6	Lack of linkage with EXC	Low price of soy bean	Decrease soy bean producers	Link with EXC	Agriculture and transport and trade office
7	Lack of credit for Muslim community at free interest rate	Exposed to informal money lenders	Forced to sell after harvest immediately	formulate religious match credit to Muslim community	Agriculture and cooperative
8	Limit field level technical service				

Soy bean Marketing Actors at Dangur District

Dangur Trade and Transport office has been delivered many services to smallholder soy bean producers as well as soy bean traders. It has been given 49 soy bean licenses to sell and buy soy bean during the 2017/18 cropping season. Moreover it tries to link 3 new soy bean traders with two soy bean food processing factors. 113,997 quintal was sold to terminal market via 49 soy bean traders during the same cropping season.

It gives soy bean trade license based on the requirement of concert flour warehouse, working capital, asset mapping, packing sack machine and sometimes considered at least one employed quality control expert. It does not consider longevity, success, trade volume and trends, sanitary certification and trade skills as requite to involve in soy bean business.

The district office has been established three soy bean marketing centers during cropping season. These were Manbuk o1, Jemtiya and Kota soy bean marketing centers. Selling of soy bean out of these market centers is a crime. Approved of this regulation decreased Number of brokers, cheating kilo and relatively increase producers price. In addition to these services, three new soy bean traders linked with terminal soy bean market, created legal transport service providers, creating awareness, posted three times per week current National soy bean market price at soy bean market centers and providing technical book keeping methods. As district office we will like expand the market centers to Ankesha and Jaba kebele.

There were different regulations regarding to soy bean trading. Among these Soy bean never sold out of these markets, specific trade license method like soy bean, sesame and Masho only, punishment method, announcement of illegal soy bean traders has its own benefit package. Mean 60% of total illegal bought price given to announcer. These rule and regulations has been launched new road of negotiation between producers and traders to set price.

Traders paid seven birr for sport and municipality per quintal. Our district has three formal market centers like Manbuk o1, Jemtiya and Kota soy bean marketing centers and two informal marketing centers like Ankesha and jaba kebeles. Addis Ababa, Adama and Bisheftus, Gondar city are more potential soy bean consumption areas.

Soy bean trade transaction points in Dangur district

- Manbuk o1 → Manbuk town → Addis Ababa → exporters/ Oil and Food factory
- Jemtiya → Manbuk town → Addis Ababa → exporters/ Oil and Food factory
- Kota → Manbuk town → Addis Ababa → exporters/ Oil and Food factory
- Ankesha → Jawi town → Addis Ababa → exporters/ Oil and Food factory
- Jaba → Jawi district → Addis Ababa → exporters/ Oil and Food factory
- Abay dar kebele → Bamur town/Quara disstrict → Gondar city/ oil factory/
- Abay dar kebele/dangur district/ → Bamur town/Quara disstrict → Gondar city → Addis Ababa → exporters/ Oil and Food factory

Soy bean Marketing Actors at Jawi District

Jawi Trade and Transport office has been delivered many services to small holder soy bean producers as well as traders. It has been given 121 new soy bean licenses to sell and buy soy bean during the 2017/18 cropping season. 1,000,098 qt was sold to terminal market via 121 soy bean whole traders and cooperatives during the same cropping season. This traded quantity is greater than the 641,393.5qt of soybean produced in the district during the cropping season. This is may be due to improper measuring of the soybean sown area as well as the quantity produced that May be rise from knowledge and skill gap of experts. It gives soy bean trade license based on the requirement of warehouse, trade license(tin Number), Kebele identification card, working capital, asset mapping, and sometimes considered at least one employed quality control expert. It does not consider processing machine, longevity, success, trade volume and trends, sanitary certification and trade skills as requite to involve in soy bean business.

The district office has not been identified potential soy bean marketing centers during cropping season. But now it identified eighteen soy bean marketing centers and sends to Amhara trade and transport office to be established for 2008/19 cropping season. These are Finkika, kezkazit, kentelie and bakksa of soy bean marketing centers. There were not new trading regulations regardless to soy bean product. Rather they were given license of soy bean under bean crops tradingsystem.

Traders paid ten birr fee for service per quintal. Jawi district has not been demarked formal soy bean market centers. But now the districts identify eighteen potential soy bean trade centers for 2018/19 cropping season. The market centers are sending to Amhara trade and transport regional beauro for formal establishment. These are divided in two main trading routs. Kezkazit and Kebtelie kebeles are Qura rout and other sixteen kebeles are Fendika town routs.Fendika is the capital city of the district. Addis Ababa, Adama and Bisheftus, Gondar city are more potential soy bean consumption areas.

Soy bean trade transaction points in Jawi district

- Finkika → Fendika town → Addis Ababa → exporters/ Oil and Food factory
- Others 15 Kebeles → Fendika town → Addis Ababa → exporters/ Oil and Food factory
- Kezkazit → Quara town → Gondar city → Addis Ababa city → exporters/ Oil and Food factory
- kebtelie → Quara town → Gondar city → Addis Ababa city → exporters/ Oil and Food factory

Opportunities of soy bean Business

- Entered to enforced production trading method
- It is on the way to enter to Ethiopian commodity exchange
- Increasing in production and productivity
- Large amount of cultivated land Suitable for soy bean production
- Increase trends of farmers soy bean production
- Availability of Community based seed multipliers
- Availability of improved seeds
- Increased number of soy bean traders
- Storable ability
- Soy bean production requires less amount of inputs like fertilizer and labor
- Used as raw material for oil and food factory

Challenges of soy bean Business

- Lack of infrastructure to connect kebele with main road

- Low interest of soy bean trading license in remote kebeles especial in Jaba, Ankesha and Abay ber kebeles
- Shortage of loanable capital
- Shortage of improved seed particularly jawi district

Role of Financial service providers in Dangur district

Finance is the engine of business. Business men's or producers can easily bought raw materials to run their business timely. At the district level credit was accessed to smallholder farmers through cooperatives and dangur micro finance institution. Dangur micro finance access credit to smallholder farmers through purchase of fertilizer, improved seeds and directly in cash to run their own business plan. The district micro finance institution has been allocated birr 4,399,565.38 for purchasing of fertilizer based on the demand identified. Fertilizer was disbursed to smallholder farmers as credit during the cropping season. However it has not been given soy bean specific credit. According the institution manager Mrs. sisay, small scale farmers and traders or collectors were the main credit targeted beneficiaries. The institution has 996 and 528 numbers of active savers and active borrowers during the cropping season. Active savers were saved 50 birr per month and active borrowers lend money at 16% interest rate. Its borrowing capacity was range from birr 5,000 to 30,000 according to their demand and business plan profitability.

Cooperative is also another alternative financial institution in the district. It supplied fertilizers, improved seeds, buying and selling of agricultural outputs. In addition these services it provides credit in terms of cash to its rural saving credit members. Cooperative has not been giving training during the cropping season. Four primary multipurpose cooperatives in the district established Dangur Abay Union in 2012 with birr 180,000 capitals. Now it has ten primary multipurpose cooperatives with 2479 members (male 1983 and female 495). It was bought 1056 qt of soy bean product and supplied to terminal market during the cropping season. In addition to this 30 qt of improved soy bean was bought and supplied to soy bean producers during the same season.

Opportunities and Challenges of Micro finance institution

The Micro Finance institution catalyzed the soy bean production and marketing institution by delivery different services. It gives awareness creation training about the importance of saving, credit administration, its capital cost or interest rate, the difference between banking and micro finance institution services. The institution served as saving and credit delivery institutions during the cropping season. However it faces different opportunities and challenges. These are illustrated as follow

Opportunities

- Trend of active savers have been increased.
- Trend of active borrowers have been increased

Challenges

- Shortage of capital for loan
- Lack of branch at kebele level to expand the service
- Allocation of credit for un intended business plan

Conclusion and Recommendation

The study was conducted at Jawi district Amhara region state and Dangur Benshangul Gumuz Regional state in North western Ethiopia, with the purpose of investigating the major opportunities and challenges of soybean production and marketing along different actor of soybean sector to boost the production and productivity of soybean as well as to benefit soybean producers by focusing on production and marketing of soybean sectors and linking in to agro-industries. According to the focus group discussion and key informant interview conducted on soybean producers and soybean researchers, keble and district experts even though the soybean sector has many opportunities such as require few plowing frequency, gives high yield per hectare in the study area than other beans, low organic fertilizer, storable ability, used as input for oil, food and feed industries, the sector faced with low and fluctuated output price, poor linkage among soybean actors, lack certified private or governmental soybean seed multiplier, limited usage of newly released soybean varieties particularly $Pawe_1$, $Pawe_2$ and $Pawe_3$ which has high yielding and oil contents, lack of contractual farming systems.

Although different market sectors were involved at district soybean marketing, the sector faced different challenges at district level such as lack of standardize ware soybean ware house, soybean market centers were nor well delineated and functioning, does no well cleaning checking at ECX centers and it take time to unload and expose to additional costs for traders. Despite trader's faces different challenges to transact their soybean commodity, they are more profitable than soybean producers in collectivity that earned 104 ETHB per quintal with simple transaction costs.

This needs to be faire soybean sector in order to continue the production and marketing of the sector. Hence governmental organization should focus on productivity and production of soybean in the study area in order to supply enough amount of soybean output to domestic agro industries as well as to fill the demand of edible oil in

the country. Therefore to stimulate the soybean sector GO and NGO should be focused on the strong linkage between soybean producers and oil and feed industries, soybean marketing agents and soybean seed multipliers with price ceiling.

References

CSA(Centeral Statistics Agengcy), (2018). Area and production of major crops Centeral Statistics, Government of Ethiopia.4

Getahun, A., Tefera, E., (2016) Soybean Value Chain Assessment Study in Northwestern Ethiopia, Metekel Zone Asian Journal of Agricultural Extension, economics and Sociology.

JDAO(Jawi District Agricultural Office), (2018). Annual Agricultural activities performance report.

GTPII(Growth Transformation Plan II), (2015). Ministry of Agriculture and Rural Development Second Growth and Transformation plan. Addis Ababa, Ethiopia.

PARC(Pawe Agricultural Research Center), (2018). Annual Report of Pawe Agricultural Research Center. Pawe,Ethiopia.

Welay Tesfay (2023). Impact of Improved Groundnut Variety Adoption on Groundnut Productivity of Smallholder Farmers in North Western Ethiopia. Journal of Biology, Agriculture and Health Vol.13, No.1, 2023, 25-35.

Welay Tesfay; Desalegn, T., (2019). Impact of Improved Soybean Variety on Enhancing Productivity and Gross Farm Income of Smallholder Farmers in North Western Ethiopia. Journal of Natural Sciences Research Vol.9, No.15, 2019, 25-39.

Welay Tesfay (2021). What Factors Determine the Rate and Level of Improved Coffee variety Adoption under Smallholder Farmers in North Western Ethiopia? Journal of Poverty, Investment and Development Vol.59, 2021, 29-42.

Welay Tesfay; Belete, W., (2021). Profitability of groundnut Production under Smallholder Farmers in Metekel Zone North Western Ethiopia. Journal on Research Humanities and Social Sciences Vol.11, No.15, 2021, 1-8.