

Constraints and opportunity of mango Production in the case of Homosha woreda, Benishangul gumuz regional state, Ethiopia

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Abstract

Mango is the crucial fruits for home consumption and playing a significant role in the local economy as a means of earning livelihoods for millions of farmers, creating jobs and generating foreign currency in Ethiopia. Homosha woreda's which is found in Assosa zone of Benishangul gumuz regional state western part of Ethiopia is potential in fruits production; mainly avocado, mango and papaya are the dominant sub-tropical fruits in the woreda's. However, currently, farmers are not benefited and production and productivity of the fruits are being decreasing from time to time because of some constraints of them. Therefore this study was attempted to assess the production constraints of mango in the woreda's. Random sampling method and quantitative and qualitative data type has been employed for data collection. Accordingly, data was collected from 90 randomly selected mango producing households in the woreda's from three Kebeles namely Algela, Dareselam and Ashura. Focus Group Discussion and Key Informant Interview were made to organize qualitative data type. The result showed that disease, insect pests, bird damage, land shortage, lack of credit, high input price, limited knowledge, poor seed quality and weed were the core production and productivity constraints of mango in Homosha woreda's. Therefore the policy makers should have to encouraging the researcher to release generation of disease and insect tolerant varieties of mango, strengthening extension services and also enhance knowledge and skills of smallholder farmers' developmental endeavors should work and participate on the provision of improved crop varieties, input delivery, support research and development should be focused to improve the livelihood and economy of the farmers'.

Keywords: Homosha; Sub-tropical fruits; Production; Mango; Ethiopia

1 Introduction

Mango is an important cash crop in the tropics and subtropics [2] and one of the five most important fruit classes worldwide (together with bananas, oranges, grapes, and apples). Mango is widely planted in the tropics and subtropics [6] and also according to [5] & [4] study's Mango (*Mangifera indica* L.) is the second among fruit crops in Ethiopia in its production coverage and economical importance. However, compared to the countries' potential, it is at the infant stage.

According to the studies of [8] in Ethiopia, fruit production has been dominated by tropical and sub-tropical fruits. The major economic importance fruits such as citrus, banana, grape, avocado, mango, papaya, pineapple, passion fruit, strawberry are all introduced to Ethiopia from other regions of the world through missionaries, diplomats, merchants, and native scholars and are mainly produced under small-scale farmers and also According to [3] study's result fruit productions, particularly, sub-tropical fruits have been playing a significant role in the local economy as a means of earning livelihoods for millions of farmers, creating jobs and generating foreign currency in Ethiopia.

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According to [7] study in support of stimulating growth, economic development, food security and alleviating poverty in Benishangul Gumuz region in particular mango fruits play an important role in an on-going or future fruit development plan.

According to [5] study's availability of agricultural inputs such as fertilizers and pesticides, pest, knowledge and skill gap, and availability of improved varieties were the major constraints.

According to [1] study's problems of horticultural crops that the producers and traders facing are lack of sufficient improved varieties, lack of quality planting materials and supply system, lack of appropriate production technology, biotic factors mainly disease and insect pests, abiotic factors majorly drought, lack of improved harvesting, post-harvest handling and storage facilities; Rain fed system of production and most of the production is from the small scale farm; Cereal based research, extension and consumption system and insufficient socio-environmental protection of large scale horticultural farms.

According to [7]) the cultivation is also seasonal and the supply is revealing and unstable even in areas where irrigation is possible. The knowledge gap on fruit production techniques and processing technologies is wide. Also, knowledge of domestic consumers of the benefits of fruits is confined to very few varieties of fruits. Hence, domestic demand, with the exception of few widely known tropical fruits, is generally small and, various studies show that people generally consume fruits and vegetables on a daily basis, without considering them as basic. Part of this, Homosha woreda is endowed with varied natural resource and has the capacity to grow different annual and perennial crops.

Though mango is the major fruit in the area the production challenges and opportunities have yet not identified. Therefore, the study was done to identify constraints and opportunity on mango production of smallholder farmers' in the study area.

2 Methodology

The study was conducted in Homosha woreda of Assosa zone in Benishangul Gumuz regional state of west Ethiopia. Homosha woreda is 702 km far from the capital Addis Ababa in west of the country. The study was conducted in the three kebeles (Algela, Dareselam and Ashura) which found in Homosha Woreda, Assosa zone, Western Ethiopia. Those kebeles have been selected purposively based on their potential mango production. Primary data was collected from 90 households using structured questionnaire. Qualitative data also collected using Focus Group Discussion (FGD) and Key Informants (KII). Moreover, secondary data was also collected from different published and un-published documents. Descriptive statistics such as percentage, mean, standard deviation, tables, graphs and charts were used to analyze and describe the collected data.

3 Results and discussion

3.1 Characterization of Mango Production in Homosha woreda

The major sources of income of the farmers in the study areas are Sorghum, maize, tropical fruits and livestock. However, sub-tropical fruits, particularly mango are dominant in terms of production and area coverage in the woreda. The result showed that on average a farmer have 2.52 ha of land from this land 0.37 ha of land is covered by mango tree. Numbers of mango seedlings are 1.42 quintal averagely. Averagely nonbearing and bearing mango trees are 5.53 and 9.18 respectively. Average mango per tree production was 4.08 quintal. Average selling price of mango was 6.95 Ethiopian Birr per kilogram (1\$=45 ETB). On average a household consumed 10 quintal of mango from total production and sold 16.94 quintal of the produced to buyers. This implies to high post-harvest loss due to disease and insect pest and poor post-harvest management respectively. As a result majority of the households sold the fruit and use the income for other livelihood purposes. (Table 1).

Table 1 Mango trees owned by households

Variable	Mean	Std. Dev.
Total land owned Area (ha)	2.52	1.99
Mango fruit trees (ha)	0.37	0.33
Mango Number of seedlings	1.42	7.96

Mango number of non-bearing trees	5.53	10.12
Mango number of Bearing trees	9.18	9.88
Mango Quantity harvested per tree (Quintal)	4.08	2.40
Mango Quantity sold Fruit (Quintal)	16.94	35.13
Mango Quantity sold Seedlings (number)	17.80	167.30
Mango Estimated average Price Fruit (Birr/Kg)	6.95	25.14
Mango Estimated average Price Seedlings (Birr/Unit)	0.32	2.30
Mango Home Consumed(Quintal)	10	49.46

Source: Survey results, 2019

3.2 Household composition and characteristics

According to the survey results, table 1 below indicates that mean age of the sample household heads was 46.29 with standard deviation of 19.12 years. Even if the farmers in the area have lived for long period of time (42.02 years/ both indigenous and settler communities) their mango growing experience is 22.16 years on average (See table 2below). The mean of sampled household head stay in the area is by far higher than that of experience in mango growing experience.

Table 2 Age, year lived and mango growing experience of households

Variable	Mean	Std. Dev.	Min	Max
Experience	22.16	14.38	0	60
Number of years stayed in the village	42.02	18.72	0	70
Age	46.29	19.12	0	88

Source: Survey results, 2019

Crop loss is decrease of the crop yield, definite both in terms of quantity and quality that can occur in the field (preharvest) or in the storage (post-harvest) due to biotic or a biotic factor. The result of the study portrayed that tropical fruit product losses due to pests and diseases are a major threat to incomes and food security of the households in the woreda. Accordingly, the result of the study exposed that 33.67 and 5.84 mean percentage of mango fruit is lost due to insect pests and diseases respectively (Table 3).

Table 3 Estimated yield loss of mango due to diseases and pests in the study area

Variable	n	Mean	Std. Dev.	Min	Max
Estimated yield loss (%) of mango due to insect pests	87	33.67	19.52	0	80
Estimated yield loss (%) of mango due to disease	32	5.84	8.97	0	30

Source: Survey results, 2019

The study further measured the source of information for farmers on management of insect pests and diseases of mangoes. 92.22% households have no any information regarding how to manage disease and insect pest of fruits. They have no any information access from governmental organizations such as public extension agents and research centers (Table 4). The result suggested the collaboration of government and non-governmental organizations as well as any stakeholders to aware the farmers on how to manage and protect their fruit's farm from insect pests and disease will make the sub-sector useful in improving the livelihoods of the farmers and national economy.

According to the survey results (table 5); the major production problems of mango fruits are ranked. To put in order the major constraints from the highest to the lowest constraints we were used the mean rank given by the farmers. The rank was between 1 and 9 by including them so accordingly the 1st rank was the major affecting the mango production, the 2nd rank was the second factor affecting the mango production the 3rd rank was the second factor affecting the mango production and it was ranked by farmers until the 9th rank then after by Stata version 15 software we changed it to mean so according to our Stata result the lowest mean was the major constraints and the highest mean was the lowest

constraints. Hence, the insect pests ranked as the 1st and indicated as the key problem. Moreover, the households ranked bird damage problem as their second major problem so as to sell their produce to mango cooperatives/unions then to Eth-fruit. The HHs ranked mango disease problem as their third main problems to take the advantage of the high quality and sweet juice of the Homosha mango. The fourth major problem of the households was highest input price. Limited knowledge of mango seedling, weeds, and poor quality of mango seed, land shortage and lack of credit were also respectively the factors affecting mango production.

Table 4 Source of information received on pest and disease management of tropical fruits

Source of information	Freq.	Percent
Research center	1	1.11
public extension	6	6.67
No source of information	83	92.22
Total	90	100.00

Source: Survey results, 2019

Table 5 Rank of mango production challenges and constraints

Variable	Mean	Rank
Insect pests	2.26	1
Bird damage	4.03	2
Disease	4.42	3
High input price	4.67	4
Limited knowledge	4.68	5
Weeds	4.71	6
poor seed quality	5.18	7
Land shortage	5.37	8
Lack of credit	5.64	9

Source: Survey results, 2019

3.3 Opportunities for Mango production

- Working to stabilize the price of mango seeds
- Land availability; particularly for indigenous community
- Increasing support of extension services by development agents to control insect pests and disease
- Willingness for smallholder farmers to train on mango farms for improved fruit production
- Planting quality mango seeds
- Developing farmers' knowledge on mango tree management and mango seedlings

4 Conclusion and Recommendation

This study has tried to generate information on the constraints and opportunities of mango production Homosha woreda of Assosa zone at Benishangul Gumuz region. As a result, it provides basic and relevant information on production of mango.

Hence, developmental activities should be work on the identified gaps that could milk the opportunities and fill skills and knowledge gaps of small holder farmers so as to improve their livelihoods the following mitigation measures were suggested ;

- Information on propagation, management practices of mango.
- Training on diseases and pests control of mango production

- To increase production and productivities and enhance knowledge and skills of smallholder farmers' developmental endeavors should work and participate on the provision of improved crop varieties, input delivery, support research and development should be focused.

Moreover, access to credit and saving institutions, FTC, capacity building and intervention should be strengthened.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest.

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