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# THE MAJOR PROBLEMS AND PROSPECTS OF TOMATO MARKETING: AN EMPIRICAL ANALYSIS

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More than 85% of the population of Ethiopia is small farmers dominating agrarian economy. Although population with this high number is living in the rural area, the production and productivity is very low. Because of this, most of the people are not secured themselves with food. Vegetable production can contribute to rural livelihood and development on the basis of its high added value and the high nutritional value that the products represent. The purpose of this study was to analyze the major problems and prospects of tomato marketing. The data was collected from seven Tabias and 255 households in Medebay-Zana Woreda, North Western zone of Tigray region, Ethiopia. In order to achieve the study objectives both primary and secondary data was used. A two-stage simple random sampling procedure was used to select seven sample Tabias and 255 households followed probability proportionate to size. Combination of statistical techniques was used to analyze the data. In this study, the findings of the t-test analysis indicated that most of the farmers rely on family labor, chemical fertilizer, on ponds and river/springs irrigation, and use donkey to transport. During the peak harvesting season the price of tomato falls quite significantly and found more unstable and market actors namely producers, farm gate collectors, brokers, wholesalers, traders, and consumers play a vital role in the market chain. The major challenges in tomato production are tomato weed, tomato frost and transportation related problems. The problems in tomato marketing are low price, lack of storage facilities, and lack of market centers. Opportunities for expansion of tomato marketing are market stability, infrastructure facility, market demand, improved yield, better price, storage facilities and processing facilities.

**Keywords:** Problems, Tomato, Tomato production, Tomato marketing

## INTRODUCTION

Ethiopia is located at the Horn of Africa, extending from latitude 33° E to 48° E and longitude from 3° N to 14.5° N. It is bordered by Sudan, Eritrea, Djibouti, Somalia and Kenya to the West, North, Southern East and South, respectively. Ethiopia

has a vast agro ecological diversity ranging from 100 m below sea level to well over 4600 m above sea level. It covers an area of 1,000,000 km<sup>2</sup> (World Bank, 2005). The production of vegetable crops was a major element of the farming system of some of the Woredas in the North western part

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of Tigray such as Medebay-Zana, Tahtay Koraro and Asgede Tsembela. In the areas where water for irrigation was available and farmers have access to the market, vegetable production is a major source of cash income for the households.

The tomato cultivation is the most important and widely grown vegetable in the world. In Ethiopia there is no definite time recorded regarding the introduction of cultivated tomato. Today farmers are interested in tomato production more than any other vegetables for its multiple harvests, which result in high profit per unit area. It is an important cash-generating crop to small-scale farmers and provides employment in the production and industries. It is also a source of vitamin A and C as well as minerals. Such diverse uses make the tomato an important vegetable in irrigated agriculture in the country. Tomato production gives an opportunity for production of high value added products and increase small holed farmers' participation in the market. In the areas where irrigation was available farmers have access to the market. Tomato production is a major source of cash income for the households. Tomato products were supplied to the local markets. Tomato production and marketing were the major sources of livelihood for a large number of farmers, transporters, middlemen and traders in the area (Woldehanna, 2000).

The fresh fruits and processed products are distributed to local markets and exported to Djibouti and other markets. There were whole sellers' groceries roadside markets which are involved in the distribution of fresh produces. The produces in local markets were transported by donkey, carts, tracks and humans packed in wooden boxes or crates. Frequently, small farmers who produce the bulk of tomato, suffer

for price fluctuation. They are forced to sell tomatoes to local merchants who have all the access to buy tomatoes at whatever price they fix. Organized tomato market systems in the main production centers region are needed in order to assist and encourage those involved in the development of the tomato industry (Lemma, 2002).

The government support for market integration and agro-enterprise development provides an opportunity for the tomato growers and market actors. This indicates that the government is using policy support as one of the mechanisms for creating investment opportunities in the vegetable promotion sector for production, transportation, grading, exporting and financing the venture, however, witnessed that farmers are getting low price for the agricultural commodities and the middlemen and exporters were major gainers from the business. Farmers were often losers or received a marginally low share of the price paid by the consumers for the tomato products. Few studies were available on tomato marketing, greater need to diversify export earning options by improving the quality of produces supplied to the export market and enhancing the efficiency of the marketing system to contribute to the economic growth of the country. Nevertheless, study was needed on how to do this and particularly on how to improve the livelihoods of poor producers by increasing their share of the market price and enhance farm productivity. In order to address these issues and generate further knowledge on the production and marketing practices of tomato in the study area and inform policy makers as well as to use the knowledge gained as basis for designing local level development programs.

## STATEMENT OF THE PROBLEM

Tomato and tomato products are important part of human diets. Currently, tomato has a higher consumption rate in developed countries and is often referred to as a luxury crop. In developing countries, tomato has become important part of the food basket as well. Tomato is the most widely consumed vegetable type in Ethiopia.

It is well known that different attributes put households under different production and marketing potentials. The market outlets that households would like to participate might influence the type of vegetable crops they would like to grow and the size of farm land they would like to allocate to a specific crop. This could be due to the fact that the production and marketing decisions of households are two sides of the same coin. The two decisions go hand in hand as farmers produce what they could sell at an available market. Knowing the interaction pattern between the two decisions helps to understand what crop is sold at which market and whether the intention of selling at a particular outlet increases or decreases the allocation of farm land to the specific crop.

In moving from subsistence towards cash crop production, the role of markets and market price, information and infrastructure are substantial. Marketing of tomato, there is no link fruit at farm-gate which is an interesting process that has not been investigated much in Medebay Zana woreda. Both buyers and sellers usually do not have equal market information on the tomato prices at the local market. Under such circumstances, farm house holds selling tomato at farm-gate deal with the trade-off between selling their fruit at higher possible prices and

avoiding the risk of losing product quality, if the transaction fails by holding on to higher prices. An interesting issue in this regard is what factors could enhance sellers bargaining position at the farm-gate transaction and how information flows facilitate farm-gate transactions to take place in a short period. However, due to some problems in market system and lack of relevant solutions for these problems of producers and consumers were not satisfactory in the study area. In the rural areas of Ethiopia for farmers better marketing is sine-qua-non. Farmers primarily market their Agricultural produce. Hence, to balance the demand and supply, it is important to conduct a research study on problems and prospects of tomato marketing, which is an important source of income for the farmers. Moreover there are no Woreda specific studies on the problems and prospects of tomato marketing. It is expected that the research study's findings may help to the policy makers, implementers, traders, tomato producers, researchers, Government and Non-Government Agencies (NGOs) to initiate appropriate measures.

## OBJECTIVES OF THE STUDY

### General Objective

The general objective of the study is to analyze the problems and prospects of tomato marketing in Medebay-Zana Woreda, Ethiopia.

### Specific Objectives

1. To analyze the existing nature and structure of tomato chain in Medebay-Zana Woreda.
2. To identify challenges of tomato production and marketing in the study area.
3. To suggest suitable strategies for effective functioning of tomato marketing in the Woreda.

### **Delimitation of the Study**

This study has been conducted in Medebay-Zana Woreda of north western zone of Tigray region. The study has covered seven villages namely: Bahra, Walka, Debrekerbe, Kuluferha, Meshel, Adi-Bareje and Adi-Kemaleke specific Kebeles were selected by simple random sampling. This study was limited on examining problems and prospects of tomato marketing.

### **Limitation of the Study**

Due to scarcity of resource such as financial and time resources data were collected from 255 sample respondents of seven samples villages which were selected randomly. The study was conducted in one of the 34 Woredas of the Tigray region. The study was based on a limited sample size and this might not represent the whole region. The study results might not be generalized to the other parts of Tigray region in particular and Ethiopia in general.

### **Significance of the Study**

The main aim of the study was to identify problems and prospects of the tomato marketing in the Woreda. Therefore, this study has significant role to help policy makers in designing appropriate strategies that would be improved the effectiveness of tomato marketing in the study district in particular and Tigray region in general. The study findings assist to tomato producers, traders, and marketing agents to make appropriate decisions in tomato production and marketing.

## **CONCEPTS AND DEFINITIONS**

The marketing concept is a management philosophy that prompts a business organization to try to satisfy customers' needs through a

coordinated set of activities that also allows the organization to achieve its goals. Customer satisfaction is the major objective of the marketing concept. The philosophy of the marketing concept emerged during the 1950s, as the marketing era succeeded the production and the sales areas. As the 1990s progressed into the relationship marketing era, transaction based marketing was replaced by relationship marketing. To make the marketing concept work, top management must accept, it as an overall management philosophy. Implementing the marketing concept, it requires an efficient information system and, sometimes, the restructuring of the organization.

The five principal variables that make up the marketing mix are product, place/distribution, promotion, price and people. The product variable is the aspect of the marketing mix that deals with consumers' wants and designing a product with the desired characteristics. A marketing manager tries to make products available in the quantities desired to as many customers as possible and to keep the total inventory, transport and storage costs as low as possible. The promotion variable relates to activities used to inform one or more groups of people about an organization and its products. The price variable refers to establishing pricing policies and determining product prices. The people variable controls the marketing mix; facilitates the product's distribution, sale and service; and as consumers or buyers give marketing its rationale. Marketing exists to encourage consumer satisfaction.

The American Marketing Association defines a market as the aggregate demand of the potential buyers for a product or service. Kotler (2003) defines a market as an area for potential exchanges. Thus, a market is a group of buyers and sellers interested in negotiating the terms of purchase/sale of goods/services. Generally,

exchange takes place in a market. Market includes a place or a geographic area where potential buyers and sellers meet and negotiate the terms and conditions for the purchase or sale of products and services. The term market essentially stands for place and period.

**Agricultural Marketing:** It is the performance of all business activities involved in the flow of food products and services from the point of initial agricultural production until they are in the hands of consumers (Kotler, 2003).

**Agribusiness:** It is defined as the coordinating science of supplying agricultural production, inputs and subsequently producing, processing and distributing food and fiber (Abrar *et al.*, 2004).

**Marketing Management:** It is the art and science of choosing target markets, keeping, and increasing customers through creating, delivering and communicating superior customer value (Kotler, 2003).

**METHODOLOGY**

A three stage random sampling procedure was used for the selection of the study area and sample respondents for the indepth study.

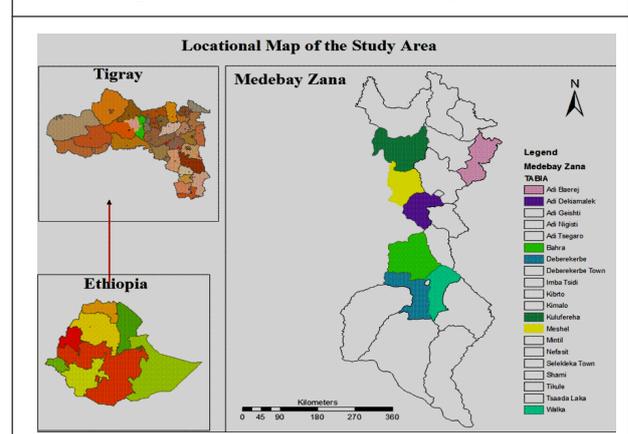
In the first stage, Medebay-Zana district has been selected purposively for the present study, because of the district having more tomato cultivated area. The district is plying a vital role in supplying tomato to Axum and Shire markets. The district has more irrigation potential for cultivation of the tomato. More traders, both whole sale and retailers, are participating in the tomato marketing. Hence, Medebay-Zana district was purposively selected for the present study.

In the second stage, random sampling techniques were employed for the selection of study villages and sample respondents. In the

second stage, out of 12 predominant tomato cultivation villages (Tabias), 7 villages were selected by using simple random sampling from different directions of the district.

In the third stage, the list of tomato producers have been collected from Agricultural and Rural Development Office (ARDO) for the seven villages. From each village 14% of the respondents have been selected by using systematic random sampling. Care was taken to cover all categories of the farmers. Altogether 255 sample respondents were selected out of 1821 total population from the seven villages. The sample respondents have been selected on probability proportionate to size (PPS).

**Figure 1: Map of the Study Area**



**Sampling Frame**

**Table 1: Sample Distribution of the Tomato Growers**

S. No.	Villages	Total Tomato Growers			Total Sample Size 14 % of the Total Population
		Male	Female	Total	
1	Bahra	339	103	442	62
2	Debrekerbe	79	11	90	13
3	Walka	104	36	140	20
4	Kulufereha	24	8	32	4
5	Meshel	37	14	51	7
6	Adi-Baereg	139	24	163	23
7	Adi-Kemalek	694	209	903	126
Total		1416	405	1821	255

**Sources and Methods of Data Collection**

Both the primary and secondary data were collected for this study. Primary data have been collected from a total of 255 households those who have been selected by randomly from the seven villages. The primary data was collected during the period of December, 2011 to February 2012. The secondary data was collected from different books, reports from government authorities (National, Regional, Woreda, and Village offices), journals, thesis, and internet, as well as published and unpublished documents from relevant organizations, which are appropriate to the study.

**METHOD OF DATA COLLECTION**

Interview method was used for primary data collection. A structured interview schedule was prepared to collect the necessary primary data. The interview schedule was first prepared in English and translated into Tigrigna for practical field work. The interview schedule was pre-tested before actual administration with 15 members and necessary adjustments were made to make it fit with the real conditions prevailing in the study area.

Based on the objectives of the study appropriate tools and techniques were used for data analysis, the descriptive statistics and the econometric models of linear regression model or Ordinary Least Squares (OLS) was employed in the analysis of the data collected for the study.

**RESULTS AND DISCUSSION**

**Distribution of Sample Respondents by Age**

The survey data indicates that sample respondents' age ranged from 27 to 75 years, with a mean age of 46.68 years and a standard deviation of 9.623. It was found that statistically

significant at less than 1% level of significance which suggests that as age is increased, the probability of tomato production will be decreased, see Table 2.

**Table 2: Average Age of the Respondents**

Character	N	Mean	SD	T-value
Age of respondent	255	46.68	9.623	77.466

Note: \*\*\* Significant at less than 1 % level of significance.

An attempt has been made in Table 3 to analyze the distribution of sample respondents according to their age groups.

**Table 3: Distribution of Sample Respondents by Different Age Groups**

Category of Respondents	N	Percent	Chi-square Value
27-45	121	47.5	1.205*
46-55	88	34.5	
56-65	37	14.5	
≥66	9	3.5	
Total	255	100	

Note: \*Significant at 10% level of significance.

The analysis clearly shows that majority of the sample respondents are in the age group of 27 to 45. In the age group of 46 to 55 years, there are 34.5% and 14.5% belongs to 56 to 65 age group. In the age group of above 66 the representation of the sample households are insignificant about 3.5%.

Marital status of the sample respondents is presented in Table 4. Out of 255 sample respondents, 93.2% of the sample respondents were married while about 0.8% is unmarried, 3.2% are divorced and the remaining 2.8% are widowed. The analysis clearly shows that majority of the sample respondents are married as most of the community's preferred early marriages in rural areas.

**Table 4: Distribution of Sample Respondents by Marital Status**

Marital Status of Respondents	Tomato Production in Quintal		Chi-square value
	Number	%	
Married	238	93.2	76.684*
Unmarried	2	0.8	
Divorce	8	3.2	
Widowed	7	2.8	
Total	255	100	

Note: \*Significant at 10 % level of significance.

Level of education will certainly have positive influence in better understanding of the technical agricultural practices of tomato cultivation. Education may also help in choosing profitable channels of marketing. It is in this context an attempt is made in Table 5 to analyze the distribution of sample households according to the level of education they possess. Table 5 shows that 31.8% of the sample respondents belong to the illiterate category, 65.9% of the respondents have completed Elementary and Junior school, the respondents who have grade 8 and above qualification accounted just 2.3%. The study indicates that the farmers who have

**Table 5: Distribution of the Sample Respondents According to Education Level**

Education Level	Tomato Production in Quintal		Chi-square Value
	Number	%	
No formal education/ illiterate	81	31.8	1.372***
Elementary and Junior school	168	65.9	
>8 grade	6	2.3	
Total	255	100	

Note: \*\*\*Significant at less than 1% level of significance.

higher education level show interest to grasp new ideas and try to adopt the technology by getting some of the scarce resources. This could explain the variation with regard to participate decision on tomato production. It was found that the significant difference in relation to education level, at less than 1% level of significance.

**Distribution of Sample Respondents by Cultivated Land Holdings**

The cultivated land holding of sample households varies from less than 0.1 to 3.8 ha with an average land holding of 0.863 ha with standard deviation of 0.4396 see in Table 6.

**Table 6: Average Land Holdings of the Sample Respondents**

Characteristics	N	Mean	SD	T-value
Respondents by cultivated land holding in hectare	255	0.863	0.4396	31.349***

Note: \*\*\*Significant at less than 1% level of significance.

The land holding pattern of the sample respondents is examined in Table 7. From the analysis it indicates that 78.4% of the respondents are having less than 1.0 ha of land, while, 19.6% of the respondents are having between 1.1-1.5 ha of land and 2.0% of the respondents are having more than 1.6 ha of land.

**Table 7: Distribution of Sample Respondents by Cultivated Land Holding (in Hectare)**

Area in Hectares	Tomato Production in Quintal		Chi-square Value
	Number	%	
<1.0	196	78.4	2.035***
1.1-1.5	54	19.6	
>1.6	5	2.0	
Total	255	100	

Note: \*\*\*Significant at less than 1% level of significance.

## LAND FOR TOMATO CULTIVATION

The proportion of the land selected for the production of tomato during the survey year was on the average of 0.291 of the total cultivated land owned by the respondents with a standard deviation of 0.2525 as in Table 8. Table 9 also shows that 73.3% of the respondents possess land less than 0.25 ha of land, while, 12.5% of the respondents possess in between 0.26-0.5 ha of land, 2.0% of the respondents possess in between 0.6-0.75 ha of land, 11.8% of the respondents possess in between 0.76-1.0 ha of land and greater than 1.1 ha of land holding respondents constitute 0.4% only.

**Table 8: Average Land Holdings for Tomato Cultivation**

Characteristics	N	Mean	SD	T-value
Respondents by cultivated land holding in hectare for tomato production in hectare	255	0.291	0.2525	18.427***
<b>Note:</b> ***Significant at less than 1% level of significance.				

**Table 9: Distribution of Sample Respondents by Land Holdings for Tomato Cultivation**

Characteristics	Tomato Production in Quintal		
	Number	%	$\chi^2$ -Value
<0.25	187	73.3	1.176
0.26-0.5	32	12.5	
0.6-0.75	5	2.0	
0.76-1.0	30	11.8	
>1.1	1	0.4	
<b>Total</b>	<b>255</b>	<b>100</b>	
<b>Note:</b> There is no significant difference.			

## Distribution of Sample Respondents by the Type of Vegetables Grown

Tomato production is the most important vegetable crop in the study area. The major vegetables grown in the study area are Tomato, Onion, Garlic, Pepper and other crops and fruits. During the survey year, since the study area is one of the major tomato producing areas in the region, tomato is cultivated by all the sample respondents. Furthermore, it was found that out of the total sample respondents, 17.3% of the respondents are cultivating onion, 7.8% of the respondents are growing Garlic, and 6.7% of the respondents are growing pepper (see Table 10).

**Table 10: Distribution of Sample Respondents by the Type of Vegetables Grown**

Characteristics	Tomato Production in Quintal		
	Number	%	$\chi^2$ -Value
Tomato	255	100	63.844
Onion	44	17.3	
Garlic	20	7.8	
Pepper	17	6.7	
<b>Note:</b> There is no significant difference.			

## Distribution of Respondents by Access to Extension Services

The survey result revealed that about 83.1% of the respondents had contact with extension agents during the 2010 cropping season. It was statistically tested and found to be significant at less than 1% level of significance ( $\chi^2 = 37.376$ ) (see Table 11).

From the Table 12 with regard to the frequency of extension contact from among the total respondents 9.5% contact twice in a week, 34% once in a week, 27.5 % once in two weeks, 12.1% once in a month and the remaining 16.9% have no contact with extension service.

**Table 11: Distribution of Sample Respondents by Access to Extension**

Characteristics	Tomato Production in Quintal		
Extension Service	Number	%	$\chi^2$ -Value
No	43	16.9	37.376
Yes	212	83.1	
Total	255	100	

Note: There is no significant difference.

**Table 12: Distribution of Sample Respondents According to the Extension Agent Contacted**

Characteristics	Frequency	%	$\chi^2$ -Value
The extension agent how often contacted			
Once in a week	84	34	
Once in two weeks	70	27.5	
Twice in a week	25	9.5	
Once in a month	36	12.1	
No contact with extension service	43	16.9	
Total	255	100	1.445***

Note: \*\*\*Significant at less than 1% level of significance.

**Participation of Respondents in Training Program**

An attempt is made in Table 13 to analyze the extent to which the sample respondents have been trained on scientific agricultural practices

**Table 13: Distribution of Sample Training Respondents Received on Tomato Marketing**

Characteristics	Tomato Production in Quintal		
Training Regarding to Tomato Marketing	Number	%	$\chi^2$ -Value
No	78	30.6	42.228
Yes	177	69.4	
Total	255	100	

Note: There is no significant difference.

and marketing aspects of Tomato. Table 13 presents that out of total sample respondents 69.4% of them were undergone the training pertaining to modern agricultural practices provided by Woreda Agriculture and Rural Development Department. However, the rest of the respondents constituting 30.6% have not received any type of training program. There is a need to provide training program on different aspects of modern agricultural practices and marketing techniques. The Chi-square test revealed that there was a significant farming.

**Accessibility to Markets and the Main Roads**

During the focus group discussion, it was found that the respondents are selling their agricultural products after immediate harvesting of products to the nearby local market because they require money for the payment of farm inputs, social obligation and urgent family expenses. The survey result indicated that the average distance of respondents' home from the nearest market place was 1.95 km as in Table 14. The result revealed that it was significant at less than 1% level of significance. From the Table 15, 43.5% of the respondents are living in less than 5 km away from the market, about 38.8% of the respondents are living in greater than 5 km distance away from the nearest market and 17.6% of the respondents are living in 5 km distance away from the nearest market. The Chi-square test revealed that there was no a significant farming.

**Table 14: Distribution of Sample Respondents by Distance to the Market**

Characteristics	Number	Mean	SD	T-value
Distance to the market	255	1.95	0.908	34.344***

Note: \*\*\*Significant at less than 1% level of significance.

**Table 15: Distribution of Sample Respondents by Distance to the Market**

Characteristics	Tomato production in quintal		
	Distance to Market	Number	%
Less than 5 km	111	43.5	
5 km	45	17.6	
more than 5 km	99	38.8	
Total	255	100	1.048

Note: There is no significant difference.

Table 16 shows that out of 255 sample respondents, 206 respondents constituting 82.4% of the respondents are using chemical fertilizers while 17.6% of the respondents are not using any chemical fertilizers. Farmers have an opportunity

**Table 16: Place/Institution Where Fertilizers and Pesticides are Purchased**

Characteristics	Tomato production in quintal			
	Inputs Institutions	Number	%	$\chi^2$ -Value
1-Fertilize				
No		49	17.6	
Yes		206	82.4	
Group total		255	100	73.338***
2-From where do you get				
Agriculture office		12	5.9	
Local Market		3	1.5	
Cooperative		180	92.6	
Group Total		205	100	
Group Total		205	100	2.857***
3- Pesticide				
Agriculture office		93	49.2	
Local Market		15	7.9	
Cooperative		53	28	
All choices		28	14.9	3.366***
Group Total		189	100	

Note: \*\*\*Significant at less than 1% level of significance.

to select different market sources for purchasing their fertilizers and pesticides. As it is displayed in Table 16, 92.6% of the sample farmers have purchased fertilizers from cooperatives, while 5.9 and 1.5% of the respondents have purchased their fertilizers from the Agriculture development office and open market, respectively. In addition to the above; 49.2% of the respondents have got their pesticides from Agricultural development office while 28% of the respondents have got their pesticides from the cooperatives. 7.9% and 14.9% of the respondents have got their pesticides from local market and other sources respectively. Study results clearly shows that majority of the farmers are getting their fertilizers from cooperatives and pesticides from the Agriculture and Development Agency nearby.

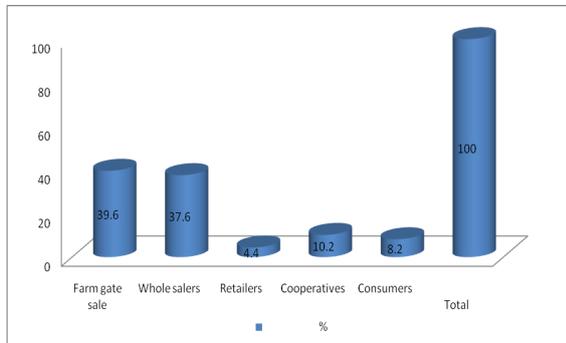
Main Problems faced by the respondents in using the pesticides are presented in Table 17. From Table 17 it is found that the 35.7% of the respondents were opined that the price of pesticides is increasing and there is constraint in using pesticides, followed by 27.5% of the respondents were faced by lack of safety device, another 17.5% of the respondents were faced by Low quality of pesticides, 12.3% of the

**Table 17: Problems Faced in Using pesticides**

Characteristics	Tomato production in quintal			
	Problems	Frequency	Percent	T- value
High price		61	35.7	
Low quality		30	17.5	
Poisoning when applying		21	12.3	
Lack of safety device		47	27.5	
No problem		12	7	
Total		171	100	2.028

Note: There is no significant difference.

**Figure 2: Distribution of Sample Respondents According to Their Selection of the Market Chain**



respondents were faced by poisoning when applying the pesticides and the remaining 7% of the respondents were not faced by any problem.

As indicated in Table 18, 36.5% and 21.6% of the sample farmer respondents stated that the most important problems facing in tomato market are price fixing by a certain market and price instability respectively, where as 14.1%, 12.2%, 8.6% and 7% reacted that inadequate

**Table 18: The Most Important Problems Facing in Tomato Marketing**

The most important problems facing in tomato market	Tomato production in quintal		
	Count	Percent	$\chi^2$ -Value
Price instability	55	21.6	
Price fixing by certain market	93	36.5	
Inadequate infrastructure	36	14.1	
Low trading practice of cooperatives	31	12.2	
Lack of regulation unlicensed traders	18	7	
No isolated market for vegetables	22	8.6	
<b>Total</b>	<b>255</b>	<b>100</b>	<b>5.172</b>

Note: There is no significant difference.

infrastructure, low trading practice of cooperatives, lack of isolated market for vegetables, and lack of regulation for unlicensed traders are the problems, respectively. Therefore, the most important problems in the study area are price fixing by a certain market and price instability, respectively.

The survey result shows that 100% of the producers intend to expand tomato production. The opportunities they anticipate to realize in the intended plan is given in Table 19. Though the entire farmer respondents say that there is an opportunity to expand the tomato production, the opportunities they obtain differ out from one to other. 7.8% of the sample respondents say that the most common opportunity to expand the tomato production is related to market demand. On the other hand, 2.7% stated that better price, 7.8% said better infrastructure facility, 26.7% said Facility to processing, 19.2% stated that they could get production in better control of pests and diseases, 3.9% said storage facility and 31.9% stated that they could get production by all the

**Table 19: Sample Respondents' Responses on Prospects for Tomato Production**

Characteristics	Tomato production in quintal		
	Number	Percent	$\chi^2$ -Value
Better market demand	20	7.8	
Better price	7	2.7	
Better infrastructure facility	20	7.8	
Facility for processing	68	26.7	
Control of pests and diseases	49	19.2	
Storage facility	10	3.9	
All choices	81	31.9	
<b>Total</b>	<b>255</b>	<b>100</b>	<b>2.481</b>

Note: \*\*\*Significant at less than 1% level of significance.

above opportunities. It can be inferred that the most common opportunity to expand the tomato production is related to Storage Facility, Facility for processing, Marketability of the product, Proximity to the market, and Better infrastructure facility, and they could get production, if provided all the above opportunities and water availability.

Tomato marketing has increasing opportunities for expansion. The opportunities may vary according to seasonality and perishability nature of the farmers' product.

As it is displayed in Table 20, 44.3% and 39.5% of the sample respondents in the study area have opined that the most common opportunity for tomato market expansion is the market stability and infrastructure facility, while 7.5%, 3.9%, 3.6% and 1.2% reported storage facility, facility for processing, not easily perishable variety and better price, respectively.

Characteristics	Tomato production in quintal		
	Number	Percent	$\chi^2$ -Value
Better price	3	1.2	
Storage Facility	19	7.5	
Facility for processing	10	3.9	
Market stability	113	44.3	
Infrastructure facility	101	39.5	
Not easily perishable variety	9	3.6	
Total	255	100	1.848

Note: There is no Significant difference.

As indicated in Table 21, 36.3% and 22% of the sample farmer respondents stated that the most important constraint in the study area is tomato weeds and tomato frost, respectively, where as 20.8%, 19.2%, 7.1% and 4.7% reacted

S. No.	Challenges of Tomato Production	Frequency	Percent	$\chi^2$ -Value
1	Tomato weeds	67	36.3	
2	Tomato frost	56	22	
3	Flood	53	20.8	
4	Tomato diseases	49	19.2	
5	Lack of pesticide	18	7.1	
6	Lack of knowledge in processing	12	4.9	
Total		255	100	2.765***

Note: \*\*\*Significant at less than 1% level of significance.

that flood, diseases, lack of pesticide, and lack of knowledge in processing are the constraints, respectively. Therefore, the most important challenge in the study area is tomato weed followed by tomato frost, respectively.

Marketing challenges have been identified from the producers' and presented in Table 22.

S. No.	Challenges of Tomato Production	Frequency	Percent	$\chi^2$ -Value
1	low price of product	97	38	
2	lack of storage	72	28.3	
3	lack of market	38	14.9	
4	lack of transport	21	8.2	
5	tomato pershability	11	4.3	
6	tomato brokers hinder fair sales	10	3.9	
7	lack of market information system	6	2.4	
Total		255	100	3.189***

Note: \*\*\*Significant at less than 1% level of significance.

Accordingly, 38% of the respondents pointed out that the low price of the products is the main problem in the study area. 28.2% of the respondents have revealed that the lack of storage facility is the problem in tomato marketing. 14.9%, 8.2%, 4.3%, 3.9% and 2.4% of the respondents replied that the lack of market facility, lack of transport facility, tomato perishable nature, tomato brokers hinder fair sales and lack of market information were the constraints respectively. From the analysis it was found that the major problems are low price of products, lack of storage facility and lack of market facilities in the study area.

**Farmers’ Perception About Tomato Seed and Other Parameters**

According to the survey data result, 59.2% of the respondents have perceived that the productivity/ yield of improved varieties of tomato seed is better than other vegetables such as onion, garlic and pepper. The Chi-square test supported that the difference in perception was significant at less than 1% level of significance ( $\chi^2=1.505$ ) (see Table 23). This implies that farmers’ perception about the crop had a logical association with the participation of tomato varieties in the study area.

**Table 23: Distribution of Sample Respondents by Types of Tomato Seed Used**

Characteristics	Tomato production in quintal		
	Number	Percent	$\chi^2$ -Value
Prospects for Tomato Production			
Local seed	81	31.8	
Improved seed	148	58	
Both	26	10.2	
Total	255	100	1.505***

Note: \*\*\*Significant at less than 1% level of significance.

**RECOMMENDATIONS**

- The empirical results of this study indicate that market chain systems are positively and significantly related to increase in the quantity of tomato production. Therefore, to strengthen the existing market chain systems, the market centers or marketing agencies should give proper attention to enhance tomato production.
- Tomato weed, tomato frost, disease and pests are the major constraints in the tomato production. Farmers do not know to control these problems or how to use different chemicals. Therefore, concerned department officials should give more emphasis on training programmed on different modern agricultural practices, so that they can reduce crop damage.
- Efforts should be made to undertake certain value addition activities for the tomato production available locally processed or semi-processed activities at the primary level through multipurpose cooperatives or community based organizations who should develop the relevant rural technologies for processing/value addition of tomato production. This may help the Tomato producers to gain much with limited cost.
- Owing to the lack of proven post harvesting techniques farmers have been facing the problems of deterioration in quantity and quality of tomato. Hence, there is a need to build the capacities of the farmers on post-harvesting techniques, i.e., grading, sorting, cleaning, packing, etc. These measures may also help the farmers in obtaining higher returns.
- Government market or some marketing agencies are paying procurement prices based on the quality of tomato. In this context

there is a need for creation of awareness on grading techniques. Otherwise, even if the quantity increases, it may not lead to higher income.

- Our study result shows that wholesalers and retailers are playing major role in price fixation. There is a need to strengthen the mechanism for fixing minimum support price for tomato producers. In this context marketing agencies and traders should fix the tomato prices on a scientific basis. The farmers should also be involved in the price fixation process. If the farmers are involved, the government and marketing agencies may get necessary feedback from the farmers and they are able to announce prices in a more realistic manner.
- Still the farmers are depending on private traders for getting loan; as a result farmers are heavily loosing by paying more interest rate. To rush over the crisis, there is a need to supply adequate credit through multipurpose cooperatives. Moreover, the farmers should augment their income sources, which may also prevent seeking often the financial support from the private traders.
- To minimize the demand and low pricing problem, at the peak harvesting period farmers should organize and search for other market places rather than their own Woreda market places. Moreover, for the transportation problem, if farmers collaborate to sell their

product once, it is possible to organize trucks to load the product of more farmers. In addition to this, Woreda and tibias administrators give emphasis on this strategy.

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