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Assessment of Postharvest Handling Practices and Problems on Major Crops of South Ari District, South Omo Zone, SNNPR, Ethiopia

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Abstract
Currently world is facing serious concern over the equitable, rational and sustainable use of the natural resources that support fair food supply, labour, land, clean water, environment friendly and agricultural inputs because failure in these endeavors leads to starvation and civil war. In order to attain a high nutritional status, improved post-harvest management, reduced post- harvest losses, production of value added products, effective and efficient research programs on the post-harvest sector must be strengthened and promoted. So far, a number of researches have been done on different crops, no more research was done on the postharvest handling practices and problems on major crops especially in South Ari district of South Omo Zone, Southern region of Ethiopia. Thus, the main objectives of this assessment were to assess and prioritize the major constraints on the postharvest handling of major cereal and pulse crops, coffee and spice, root and tuber crops and fruits and vegetable crops in major growing areas of South Ari district and to generate baseline information for further research work. In this specific zone, poor post harvest handling during storage, transportation and marketing were identified as the main factors resulting in increased post harvest loss of major. Poor storage system, Poor roads, inappropriate means of transport combined with a bad arrangement of packaging materials and poor marketing structures aggravated the post harvest loss of major crops of the studied areas. Appropriate packaging materials, proper storage facilities and transportation are required to minimize these losses. Also to reduce the levels of post harvest losses in the area and to rapidly transfer the produce from producers to consumers, a close integration of producers, wholesaler, retailer and consumer becomes necessary. Finally, in order to attain a high nutritional status, improved post-harvest management, reduced post- harvest losses, production of value added products, effective and efficient research programs on the post-harvest sector must be strengthened and promote
Keywords: post harvest losses, Transportation, Marketing, Storage and Consumer

1. Introduction

Currently world is facing serious concern over the equitable, rational and sustainable use of the natural resources that support fair food supply, labour, land, clean water, environment friendly and agricultural inputs because failure in these endeavors leads to starvation and civil war (Stuart, 2009a). The management and synchronization of the supply chain for fresh produces has become increasingly fundamental concern. As business sectors need to reduce postharvest losses and wastes in the supply chain by taking advantage of market opportunities which perceived from fundamental shifts in customer preferences and tastes (Wilson, 1996). World population is expected to reach 10 billion by 2050 which will require a 70% increase in food production (FAO, 2009, Tilman et al., 2001).

When I came to my country the current development strategy in the country of which "Agricultural Development Led Industrialization (ADLI)", expected a lot from the post-harvest sector. In order to attain a high nutritional status, improved post-harvest management, reduced post- harvest losses, production of value added products, effective and efficient research programs on the post-harvest sector must be strengthened and promoted (EARO, 2000). So far, a number of researches have been done on different crops, no more research was done on the postharvest handling practices and problems on major crops especially in South Ari district of South Omo Zone, Southern region of Ethiopia. For the successful research and development achievement, an agro-ecology based assessment is crucial to understand the specific postharvest handling system and problems and technology needs of farmers and /or pastoralists. In this line, an assessment study was conducted in high land, midland and low land kebels of South Ari district of South Omo Zone. Thus, the main objectives of this assessment were to assess and prioritize the major constraints on the postharvest handling of major cereal and pulse crops, coffee and spice, root and tuber crops and fruits and vegetable crops in major growing areas of South Ari district and to generate baseline information for further research work.

2. Methodology

2.1 Area Description

The survey was conducted in 2015/2016 at South Ari districts of South Omo zone, Southern region of Ethiopia. The survey assessed information about postharvest handling problems/constraints on major crops of the area. Baseline information was collected from South Ari district using qualitative data. The study was focused Postharvest handling problem or constraints of crops such as Maize, Sorghum, Finger millet, Taro, Enset ,Common bean, sweet potato, Irish potato, Cassava, Garlic, Onion, cabbage, head cabbage, cardamom, coffee, Avocado , Mango, banana, orange and ground nut at farmer level.

2.2 Data Collection

The study was conducted by a multidisciplinary team of researchers and development workers comprising of plant pathologist and food science and post-harvest technology researchers. Before starting of the study, the study team made short discussion with Agricultural and Rural development office (ARD) of South Ari district of South Omo Zone.

Discussion was made to get information with regard to the important preliminary conditions for the study such as assignment of experts for the study team, the representatives of the PA (Peasant association), selection of the informant farmers and awareness created to the farmers of the selected PA and also to the PA administration and development agents working there.

Fig 1. Discussion with farmers and Development agent of each PA

2.3 Sampling Technique

Crop producing kebeles were identified based on their potential (Eight kebeles) were randomly selected from South Ari district such as Alga, Kure, Baytsemal, Meytser, Keyisa, Senegal, Senmamer and Bako. For the purpose of discussion; we considered informant farmers of extension groups representing the PAs, mix of variable ages and both sexes were selected by themselves in collaboration with development agent of PA.

3. Result And Discussion

3.1 Problems and Causes of Postharvest losses

Farmers were used various methods and types of facilities to store their crops. The traditional grain stores identified in the study areas include gotera (granary made of wood /bamboo), bags (made of polyethylene, goat skin) and some others. Most of the respondents used gotera which leads to entrance of weevil and rodents. While some use bags (polyethylene bags) and rarely goat skin. There are several causes for the observed postharvest losses of cereal crops (Maize, sorghum and finger millet) and pulse (haricot bean). Attacks from weevil and rodents and mold growth due to excessive moisture are among the factors and agents contributing to the losses. Among these, weevils' attack was reported as the most important and commonest causes of the loss. The current finding also agreed with (Dereje et. al.,1989; Boxall ,1998) respectively.

Concerning fruits (Mango, banana and Avocado) and vegetables (cabbage, head cabbage, carrot, tomato, pepper, onion) injury during harvesting and transportation and inappropriate packaging material (polyethylene bag) used to transport the product leads decreasing market cost. In addition to this fruit and vegetables were affected by poor marketing structure (Seid et. al.,2013). For most Ethiopian smallholders, fruit

and vegetable cultivation is not the main activity rather it is considered supplementary to the production of main crops and the cultivation is on a very small plot of land and is managed by a household. This low priority for horticultural crops cultivation was mainly due to the traditional food consumption habits that favor grain crops and livestock products in most parts of the studied area resulting in weak domestic market demand for horticultural products (Moti, 2007).

They were sold in an open space being displayed in a very hot condition that increases the deteriorations after harvest. Fresh fruits and vegetables are highly susceptible to mechanical injury owing to their tender texture and high moisture content. If they exposed to undesirable environmental conditions like high temperatures during transportation and marketing soften in tissue and bruised easily, causing rapid microbial deterioration. Owing to the lack of natural defense mechanisms in the tissue, the microorganisms spread rapidly causing fruits and vegetables unfit for consumption (Adugna, 2011). Whereas on root and tuber (Enset, Irish and sweet potato, cassava, areal yam, Taro) there is no serious problem on post harvest handling because they sold their products directly after harvest. With regard to marketing, the farmers revealed that the area is potential for diverse crop production they have surplus production for sale but they are forced to sell their products in cheap price due to unavailable of infrastructure for easy transportation and poor marketing structure.

Table1: Postharvest losses of fruits and vegetables and Cereals in studied kebeles

Kebeles	Commodity	Method used	losses
Alga	Finger millet	Interviews	20%
	Maize	Interviews	50%
	Common bean	Interviews	30%
	Coffee	Interviews	15%
	Avocado	Interviews	10%
	Banana	Interviews	10%
Baytsemal	Maize	Interviews	55%
	Common bean	Interviews	25%
	Sorghum	Interviews	17%
	Mango	Interviews	50%
	Avocado	Interviews	15%
	Banana	Interviews	7%
	Orange	Interviews	7%
Meytser	Mango	Interviews	35%
	Avocado	Interviews	30%
	Maize	Interviews	13%
	Head cabbage	Interviews	11%
	Sweet potato	Interviews	5%
	Garlic	Interviews	16%
	Coffee	Interviews	9%
	Enset	Interviews	33%
	Taro	Interviews	4%
Kure	Maize	Interviews	50%
	Mango	Interviews	25%
	Banana	Interviews	5%
	Taro	Interviews	4%
Kayisa	Maize	Interviews	10%
	Finger millet	Interviews	25%
	Common bean	Interviews	10%
Senegal	Common bean	Interviews	15%
	Maize	Interviews	20%
	Sweet potato	Interviews	7%
	Irish potato	Interviews	8%
	Garlic	Interviews	8%
	Onion	Interviews	13%
Senmamer	Maize	Interviews	9%
	Common bean	Interviews	11%
	Irish potato	Interviews	10%
	Sweet potato	Interviews	6%
	Onion	Interviews	17%
	Garlic	Interviews	6%
Bako	Mango	Interviews	18%
	Enset	Interviews	20%
	Garlic	Interviews	15%
	Maize	Interviews	20%

5. Conclusion and Recommendation

In this specific zone, poor post harvest handling during storage, transportation and marketing were identified as the main factors resulting in increased post harvest loss of major. Poor storage system, Poor roads, inappropriate means of transport combined with a bad arrangement of packaging materials and poor marketing structures aggravated the post harvest loss of major crops of the studied areas. Appropriate packaging materials, proper storage facilities and transportation are required to minimize these losses. Also to reduce the levels of post harvest losses in the area and to rapidly transfer the produce from producers to consumers, a close integration of producers, wholesaler, retailer and consumer becomes necessary. Finally, in order to attain a high nutritional status, improved post-harvest management, reduced post- harvest losses, production of value added products, effective and efficient research programs on the post-harvest sector must be strengthened and promote.

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