

Seed Multiplication and Dry pod Yield Performance Evaluation of Improved Hot Pepper Varieties in Northern Ethiopia, In Case of Central Tigray

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ABSTRACT

The seed multiplication was conducted at Abergelle Agricultural Research Centre of Shekatekli (Gmtswa and Mitswa) irrigation schemes in 2006/2007 cropping season. The multiplication was aimed to solve hot pepper seed supply problems in the area as well as to show the dry pod yield performance of previously experimentally selected improved hot pepper varieties to farmers' Markofana and Melkashote hot pepper varieties were multiplied. Mean harvesting date and mean dry pod and seed yield were recorded to evaluate the two varieties at farmers field level. In this activity, 4 farmers for Markofana and 4 farmers for Melkashote were participated having an area coverage of 0.22 ha and 0.25 ha respectively. The average dry pod yield of markofana and Melkashote was about 28.25 qt/ha and 23 qt/ha respectively.

INTRODUCTION

Hot pepper (*Capsicum annuum* L.) belongs to the genus *Capsicum* and family Solanaceae (Rodriguez *et al.*, 2008). The genus consists of approximately 22 wild species and five domesticated species of *C. annuum* L., *C. frutescens* L., *C. Chinenses* L., *C. baccatum* L. and *C. pubescens* (Bosland and Votava, 2000; Patricia *et al.*, 2003). The five domesticated species include *C. annuum* L., *C. frutescens* L., *C. chinenses*, *C. baccatum* L., and *C. pubescens* R. (Bosland and Votava, 2000).

Hot pepper is one of the major vegetable crops produced in Ethiopia and the country is one of a few developing countries that have been producing paprika and *capsicum* oleoresins for export market. Because of its wide use in Ethiopian diet, the hot pepper is an important traditional crop mainly valued for its pungency and color. The crop is also one of the important spices that serve as the source of income particularly for smallholder producers in many parts of rural Ethiopia. According to the EEPA, (2003), in the major pepper producing regions in the country, that is, Amhara, Southern Nations and Nationality People's Regional State (SNNPR) and Oromia pepper generated an income of 122.80 million Birr for farmers in 2000/01. This value jumped to 509.44 million Birr for smallholder farmers in 2004/05. This indicates that hot pepper serves as one of the important sources of income to smallholder farmers and as exchange earning commodity in the country Beyene and David, (2007). According to FAO (2009) report, the estimated production of peppers were 220,791 t on 97, 712 ha in green form and 118,514 t of dry pepper from an area of 300,000 ha.

The fine powdered pungent product is an indispensable flavoring and coloring ingredient in the common traditional sauce "Wot", whereas the green pod is consumed as a vegetable with other food items. The average daily consumption of hot pepper by Ethiopian adult is estimated 15g, which is higher than tomatoes and most other vegetables (MARC, 2004).

Different types of pepper varieties are produced in Ethiopia. It varies in mode of growth in fruit characteristics such as fruit size, shape, color, and pungency. The degree of pungency varies considerably from mild to hot. Based on growth habit of the fruits pepper could be are erect or hanging depending on variety.

Abergelle agricultural research center had been carried out on adaptation trial of yield potential cultivars of pepper in farmer's field in Adiha irrigation schemes. It has been got promising result in yield potential of Melkashote and Marakofana pepper varieties

Therefore, pepper seed production is found to be important at T/Abergelle particularly Agbe Irrigation scheme.

Objectives

- To create awareness in production system of hot pepper seeds
- To evaluate dry pod yield/ha
- To reduce shortage of hot pepper seeds at the area

MATERIALS AND METHODS

2.1. Site Description

This was conducted in Tanqua-Abergelle woreda at Shekatekli(Gmtswa and Mitswa) irrigation schemes. Abergelle is situated in the central zone of the region which is about 120 kms away from Mekelle, the administrative city of Tigray. It is located 13°14'06"N latitude and 38°58'50"E longitude (CSA, 2000 In: Gebreyesus Berhane, 2004). It is agro-ecologically characterized as hot to warm sub-moist low land (SM1-4b) below 1500m.a.s.l. The mean annual rain fall and temperature is 350-700mm & 24-41°C respectively. The rain fall is erratic and unproductive nature (Legesse, 1999 .In: Gebreyesus Berhane, 2004).

2.2. Plant Establishment

In nursery site, the varieties of pepper seeds were planted in well prepared seed bed and the seed beds were covered with grass. After 48 days of planting healthy and vigorous seedlings were transplanted to the field. After transplanting 200kg/ha DAP and 100kg/ Urea in split form (50% during planting and 50% after one and half month) were applied. It was conducted at Shekatekli and Gmtswa Irrigation Schemes in 4 farmers' field for Markofana in a total area of 0.22ha and 4 farmers for Melkashote in a total area of 0.25ha.

RESULT AND DISCUSSION

Table No -1 Maturity date and dry pod yield of Markofana and Melkashote hot pepper varieties

Variety	Days to maturity/ based on sample plots					dry pod yield (qt/ha)/ based on sample plots				
	1	2	3	4	Mean	1	2	3	4	Mean
Markofana	157	157	157	157	157	28	27	28	30	28.25
Melkashote	160	160	160	160	160	25	22	23	23	23.25

Maturity date and dry pod yield of improved pepper

The day to harvesting of Markofana was averagely 157 days and 160 days for Melkashote. An average yield of markofana was 28.25 qt/ha and 23 qt/ha for Melkashote. Based on Ethiopian agricultural research organization directory of released crop varieties in 2004, Markofana can give up to 25qt/ha and in our area there was 3Qt increment. It may be environmental and soil suitability of the area.

REFERENCES

- Beyene T. and David Phillips (2007). Ensuring Small Scale Producers in Ethiopia to Achieve Sustainable and Fair Access to Pepper Market. *Uganda Journal of Agriculture*, 3(2): 113-119.
- Bosland PW, Votava EJ (2000). Peppers, Vegetables and Spices *Capsicum*. CABI Publishing. New York. PP.198.
- EARO (Ethiopian Agricultural research Organization), 2004. Directory of Released Crop Varieties & Their Recommended Cultural Practices. Addis Ababa. 28-29p.

EEPA (2003). Spice Potential and Market Study. Product Development and Market Research Directorate, Addis Ababa.

FAO (Food and Agriculture Organization), 2009. FAOSTAT Database for Production of Peppers. <http://faostat.fao.org/site/339/default.aspx>.

MARC (Melkasa Agricultural Research Center) (2004). Progress Report Addis Ababa, Ethiopia.

Patricia T, Rodriguez F, Martinez E, Duque MC, Tohme J (2003). Molecular characterization by AFLPs of *Capsicum* germplasm from the Amazon department in Colombia, characterization by AFLPs of *Capsicum*. *Genetic resources and crop evolution*, 50: 639-647.

Rodriguez Y, Depestre T, Gomez O (2008). Efficiency of selection in pepper lines (*Capsicum annuum*), from four sub-populations, in characters of productive interest. *Ciencia Investigacion Agraria*, 35(1): 29-40.