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FACULTY OF AGRICULTURE AND ANIMAL SCIENCES

EVALUATION OF THE EFFECTS OF DIFFERENT DRYING METHODS ON QUALITY OF NASPOT13 SWEET POTATO VARIETY

BY

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A RESEARCH REPORT SUBMITTED TO THE DEPARTMENT OF CROP PRODUCTION AND MANAGEMENT IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE OF BUSITEMA UNIVERSITY

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DECLARATION

I Amuron Harriet **,** declare that this report submitted to the department of crop production and management for the award of degree of bachelor of science in agriculture is my original work and effort, to the best of my knowledge, the information in this write up has never been presented to Busitema University and elsewhere for the award of any academic qualification, I hereby affirm that except for references to other people's works, which have been duly cited, this work is a result of my own research and that it has not been presented in part or whole for any other degree in this University or elsewhere.

Furthermore, I took a judicious care to certify that the work is original, and to the best of my knowledge does not fissure copyright law, and has not been taken from any other sources, so I present it without any reservation for examination considerations.

Sign: ……. Date: ……...

Amuron Harriet.

APPROVAL

This is to certify that this research report was written by **Amuron Harriet** under my guidance, supervision and I hereby affirm it to be submitted to the Department of Crop production and management for examination with my approval as a research supervisor.

Sign: ……..…… Date: ……...

DR. OPIO PETER

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LIST OF ABBRIVATION

°C:	Degree centigrade.
ANOVA:	Analysis of variance.
cm:	Centimeter.
Dr.	Doctor.
FAO:	Food and Agriculture Organization.
g:	Gram.
Ha:	Hectare.
Kg:	Kilogram.
LSD:	Least Significant Difference
M:	Meter
MAAIF:	Ministry of Agriculture Animal Industry and Fisheries.
MT:	Metric Tons.
NARO	National Agriculture Research Organization
CRD	Completely Randomized Design
OFSP	Orange Fleshed Sweet Potatoes
TSS	Total Soluble Solids.

ABSTRACT

Postharvest handling of sweetpotato through drying has persistantly remained a big issue on maintaining sweetpotato quality. Direct sun drying is the oldest method of food preservation practiced by mankind. A major disadvantage associated with direct sun drying is that it takes long time even at high temperature, which may cause serious damage to the flavor, colour, & nutrients in dried products, it is also associated with problems like contamination by foreign materials, dirt, dust and wind-blown debris and insect infestation as well as uneven drying. The study therefore assesed the effect of different drying methods on the quality of NASPOT13 sweetpotato variety, different samples of the sweetpotato were subjected to sun drying, oven drying, and solar drying. After drying, the smaples were anlysed for Vitamin C, Vitamin A, and Total Soluble Solid, and moisture content across all the drying methods. Sensory evaluation was also conducted to asses acceptability. The results of this study revealed that the ascorbic acid, vitamin A, and Total Soluble Solid (TSS) content varied significantly due to the effect of the different drying methods. Sundried orange flesh sweet potato had the highest ascorbic acid content of 5.962 mg/100g Dry Weight (DW) and least is oven dried orange flesh sweet potato with 0.892mg/100g DW dry weight. Meanwhile solar dried orange flesh sweetpotato had significantly the highest content of vitamin A of 40.15mg/kg dry weight than that dried under sun drying and oven drying with 34.44mg/kg dry weight and sun drying with 35.00mg/kg dry weight. On the other hand, TSS content was observed to be highest in the solar dried orange flesh sweetpotatoes with TSS content of 2.2% followed by sun dried orange flesh sweetpotatoes with 2.060% content of TSS and oven dried OFSP had the least with 1.91%. Therefore the study concludes that using solar drying is the most essential method of processing orang fleshed sweetpotato in maintaning the quality of Orange flesh sweetpotato as compared to oven drying.

CHAPTER ONE:

1.0 INTRODUCTION

1.1 Background of the study

Sweet potato (*Ipomoea batatas* (L.) Lam.) is a perennial tuber crop which belongs to the Convolulaceae family, originally domesticated at least 5000 years ago in tropical America (Austin, 1988; Yen, 1982). It was introduced into Africa by the Portuguese from the Atlantic Coast regions of mid-latitude America (Woolfe, 1992: 2).The flesh can be white, cream, yellow, orange, or purple (Woolfe, 1992; Bovell-Benjamin, 2007) with orange, white and cream the most commonly grown and eaten. Both leaves and the tuberous roots are more commonly eaten (Woolfe, 1992; Bovell-Benjamin, 2007).

Today, sweet potato is cultivated in more than a 100 countries in the world and plays an important part in the diet of many nations while ranking seventh in terms of total production as a world food crop. The annual production of sweet potatoes in 2000 was 140.9 million tonnes (Mt) of which Asia produced 91 % (128.8 Mt) that is mostly consumed in China, Africa 7 % (9.1 Mt), Central North America 1 % (1.1 Mt), South America 1 % (1,2Mt), Oceana 0.5 % (0.59 Mt) and Europe 0.35V% (46 000 t) (PPECB Export Directory, 200). In production value (monetary) of food commodities, sweet potato ranks thirteenth globally and, in developing countries, sweet potato ranks as the fifth most valuable food crop, accounting for one third of the production of root and tuber crops (Woolfe, 1992:1-3).

Nearly all sweet potato production and consumption takes place in developing countries (WooIfe, 1992:5). , which account for over 95% of world output & about 15% in Africa (FAOSTAT, 2001). In African countries such as Uganda, Rwanda and Burundi where starchy crops such as sweet potato are the staple food, the per capita consumption of sweet potato is 75 - 150 kg per person annually. In Malawi, Angola, Mozambique and the Democratic Republic of Congo, where maize is the staple food and sweet potato is an additional crop, the per capita consumption of sweet potato is in the region of 5 – 50 kg per person per annum (Minde, Ewell &Teri, 1999:169-182).

Sweet potato is a major staple food and income source in several regions of Uganda and elsewhere in East Africa and is among under-exploited food crops (Ndunguru, 2003). It is one of the most important food security crops, especially in those regions prone to drought and with poor soils (FAO, 2004). It is an important subsistent crop grown in almost all agro-ecological zones (Masumba *et al.,* 2004).

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