

COMPOSITIONAL CHANGES OF SELECTED SQUASH CULTIVARS
UNDER DIFFERENT STORAGE TEMPERATURE FOR
TWO STORAGE PERIODS

by

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CONTENTS

INTRODUCTION	1
LITERATURE REVIEW	4
Sugar Content and Storage	4
Carotene Content and Storage	6
Firmness and Storage	7
Losses During Storage	8
MATERIALS AND METHODS	10
Weight Loss	10
Texture Test	10
Sugar Determination	11
β -carotene Determination	16
RESULTS AND DISCUSSION	20
Percentage of Weight Loss	20
Sugars	21
β -carotene	27
Texture Test	29
TABLES	33
FIGURES	36
REFERENCE	49
ACKNOWLEDGEMENT	53
VITAE	54
APPENDIX	55
ABSTRACTS	59

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CONTENTS

INTRODUCTION 1

LITERATURE REVIEW 4

 Sugar Content and Storage 4

 Carotene Content and Storage 6

 Firmness and Storage 7

 Losses During Storage 8

MATERIALS AND METHODS 10

 Weight Loss 10

 Texture Test 10

 Sugar Determination 11

β -carotene Determination 16

RESULTS AND DISCUSSION 20

 Percentage of Weight Loss 20

 Sugars 21

β -carotene 27

 Texture Test 29

TABLES 33

FIGURES 36

REFERENCE 49

ACKNOWLEDGEMENT 53

VITAE 54

APPENDIX 55

ABSTRACTS 59

INTRODUCTION

Spaghetti squash (Cucurbita pepo) reportedly was introduced from Manchuria (7). It is becoming popular in the United States. The unusual characteristics of this squash is after cooking the flesh can be separated into a mass of strands which resemble spaghetti. The normal crop of squashes in this locality is more than twice the volume than can be consumed by the ultimate consumers before freezing weather arrives. Consequently, a large tonnage of squash is placed annually in storage for use during the winter months (14). Little information is available in the literature on storage and chemical composition of Spaghetti squash. Therefore this study was undertaken to determine some compositional changes during storage of Spaghetti squash and compared to other winter squash cultivars.

Collins (6) reported on the sensory test of cooked Spaghetti squash and evaluation of the recipes which this squash involved. He reported on the nutritional quality of both frozen and canned Spaghetti squash. Furthermore he stated that Spaghetti squash had excellent storage properties in fresh form and can be stored up to 3 to 4 months. Information on compositional changes of this squash during storage compared to other cultivars has not been reported.

Some important quality criterion for squash are:

(1) Sugars: In studying Blue Hubbard squash edibility tests substantiated by chemical analyses, Cummings and Stone (9) showed that samples of good quality contain more carbonhydrates and less water than do others of poor quality.

Yeager & Latzke (33) showed a high positive correlation coefficients between total sugars and high quality and total sugar and sweetness in Buttercup squash. The sugar content in squash varies between cultivars and different storage time. Some papers (24, 27) reported that total sugar content increased as storage time increased.

(2) β -carotene: Winter squashes are usually considered an excellent source of β -carotene, provitamin A. Previous studies have shown that squashes contain much more carotene than a large proportion of fruit and vegetables commonly used for human food (14). After evaluating carotene of six cultivars of winter squash during 25 weeks storage, Hopp, Merrow and Elbert (18) stated that the carotene content expresses on a fresh basis increased as storage time increased, but the highest values were obtained in the first 10 weeks of storage, and then remained more or less constant.

(3) Texture: Texture has been considered an important criterion to test quality of fruits and vegetables, especially for stored ones. Textures of squashes not only affects the quality after cooking but influences the storage life of squashes. Kattan and Litterell (19) studied pre- and post-harvest factors affecting firmness in canned sweet potatoes. They found that post-harvest handling had a greater effect on firmness than pre-harvest factors. Storage temperature and duration influenced firmness the most.

(4) Weight loss: Weight loss is an important factor influencing the quality and storage life of stored vegetables and fruits. Much research has been done to determine the optimum atmospheric condition to reduce weight loss as much as possible for stored vegetables and fruits (5, 12). Since weight loss is caused by physiological processes, many researchers of squashes have reported that the percentage of weight loss varies among cultivars, even under

the same atmospheric conditions. The longer the storage time, the more the weight loss (12, 13, 29).

This study was designed to evaluate some characteristics of Spaghetti squash compared to other winter squash cultivars under different storage times and temperatures. The objectives of this study were: (1) compare storage temperature and times for Spaghetti and other winter squash cultivars (2) determine compositional changes under different temperature for both Spaghetti and other cultivars (3) determine compositional changes under different storage times for Spaghetti squash and other cultivars.