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مقدمه من

على أحمد على الصاوى البنا

رسالة علمية مقدمة استيفاءً لمتطلبات منح درجة

الماجستير في العلوم الزراعية
(المحاصيل)

قسم الإنتاج النباتى

من

جامعة الإسكندرية

٢٠٠٩

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Alexandria University
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Plant Production Dept.

EFFECT OF NUMBER OF PICKINGS AND PRE-GINNING PERIOD ON THE GINNING EFFICIENCY AND FIBER PROPERTIES OF SOME EXTRA- LONG COTTON VARIETIES

BY

ALY AHMED ALY EL-SAWY EL-BANNA

A thesis submitted in partial fulfillment of the requirements governing the award of the degree of

MASTER IN AGRICULTURAL SCIENCES

(Agronomy)

Department of Plant Production

From

Alexandria University

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DEDICATION

I dedicate my thesis, with all my deepest love and appreciation to my family, father, mother, sister and brother, for their care, help and always encouragements during my study, and for helping me to believe in myself.

Aly El Sawy

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INTRODUCTION

Cotton is not only the most important fiber crop in the world ,but also, the second best potential source of plant proteins after soybean , and the fifth best oil-producing plant after soybean , palm tree , colza and sun flower (Texier , 1993). Cotton was and still the main cash crop in Egypt for both export and local textile industry. Therefore, we have to continue trying to improve its yield and fiber characters in order to face the increasing human consumption and the continuous competition of man – made fibers.

Seed cotton storage in the gin plant yard for some period can not be avoided because the rate of harvesting and delivery always surpasses the rate of ginning.

Egyptian cotton is characterized by relatively long – flowering and bolling period. This enables the cotton crop to develop during periods of more variable environments. The length of these periods relatively varies for different varieties as well as the environmental conditions in which the cotton plant is grown. Though, yield and quality of cotton crop were mostly influenced by the variations between and within seasons.

As a matter of fact, boll opening date is more important than flower opening date, since picking is practiced when a considerable percentage of bolls are opened. Many investigators studied the effect of picking date on yield, yield components and fiber quality, and concluded that the rate of boll opening followed the normal distribution.

From the practical point of view, cotton hand picking in the field has not a constant time to do it. It may be done when 50%, 70% or 100% of bolls were opened according to the number of picks desired during the season. This could differentially affect the yield of seed and lint cotton besides the fiber quality.

The Egyptian ginning season usually starts in October and extends to March. This period is characterized by rainfall, though, it is important to investigate the effect of seed cotton storing and number of picks on both seeds and lint cotton. For these reasons, the present study was carried out to answer some questions:

1- What is appropriate number of seed cotton picks?
2- What is the impact of the storage on fiber and seed characteristics?
3- How long can seed cotton be safety stored?

To answer these questions, the effect of the number of picks, period of seed cotton storage and their interaction on seed and lint quality had been studied.

2. REVIEW OF LITERATURE

Seed cotton storage is the holding of harvested seed cotton; it is fed into the ginning system. As a matter of fact, seed cotton storage can't be avoided because the harvesting rate usually exceeds the ginning rate. Though, storing seed cotton with different moisture level will cause a lot of deterioration to both seed and fiber characters. Literatures concerning the effect of weathering and seed cotton storage well be reviewed heroin in favor main categories as follows:

2.1. Effect of picking practices on fiber quality

Anderson et al. (1961 a), found that the morning harvested cotton had a higher average yarn break factor than the afternoon-picked-cotton. These differences were due to time of day of harvest and the moisture content of the cotton at the time of ginning.

Capstick and Cox (1962), stated that hand-picked bales from the early-season harvest exceeded machine picked bales by an average of about one-half grade. Similarly there was half grade difference in grade indices of the mid-season harvest. For the late - season harvest the grade loss was only one-fourth grade.

Griffin and Moore (1963), stated that cotton picked when the relative humidity was at or lower than 50% might be in the moisture content range for safe storage. When this cotton was ginned on the seventh day of storage, lint moisture content was 5% and showed a decrease in upper half mean length as compared with lint ginned at 6.5% moisture before storage. Before storage, samples showed lint grade of "strict low middling" in color, while after storage, samples showed "low middling" in color.

Parker and Wooten (1964) showed that lint color tended to vary inversely with high seed cotton moisture at time of harvest. They added that harvesting seed cotton at 10 to 12 % moisture content assured maximum fiber length when the seed cotton was ginned directly after harvesting.

Colwick (1964), demonstrated that cotton should be picked in the morning when the lint moisture content reached 10 % or less on the plant otherwise it must be dried for safe storage.

El-Shaer (1964), found that the late harvested plots graded lower in seed cotton than either early or mid- season harvests. The amount of trash found in seed cotton showed a gradual increase with the advance of the season. The method by which picking was handled affected cotton quality. The greatest effect was one grade. Whereas there were little differences in grade of lint cotton between dates or picks.

Raingeard (1968), in field trials in 1966, harvested (a) 3 times (on 27 Oct., 27 Nov. and 27 Dec.) or (b) once only (on 27 Dec. or 27 Jan.). In (a) characteristics of fiber quality (e.g., length, micronaire index, and strength) decreased significantly from the 1 st to the 3 rd harvest. The quality of cotton in (b) was significantly lower than in (a) and was little affected by storage.