اقْرَأْ بِاسْمِ رَبِّكَ الَّذِي خَلَقَ(1) خَلَقَ الإِنْسَانَ مِنْ عَلَقٍ(2) اقْرَأْ وَرَبُّكَ الْأَكْرَمُ(3) الَّذِي عَلَّمَ بِالْقَلَمِ(4) عَلَّمَ الإِنْسَانَ مَا لَمْ يَعْلَمْ(5)

سورة القلم – الآيات 1 - 5

Dedication

This thesis is dedicated to:

My loving mother, the candle who lighten my life

My father, who taught me how to fight and stand up during the hard time.

My only daughter HANEEN

All my friends and for everyone who gave me his support and advice.

To those who will be happy when my dream comes true

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Abstract

The objective of this study was to better understanding the relationship between cotton fiber length, fineness, maturity and strength.

Barakat cotton grade GB and Acala cotton grade 3SG cultivated in season (2010/2011) were used. High Volume Instrument (HVI) was used for testing fiber properties. The simple, partial and multiple correlations were applied to study the relationship between the fiber parameters. The results obtained indicated that there was a highly significant correlation between fiber maturity and strength. While there were negative correlations between fiber fineness and strength, fineness and maturity. Fiber length was positively correlated with strength and also with maturity. The stepwise regression analysis was used in order to establish a model that can predict the fiber strength.

Two models were proposed for Barakat grade GB and Acala grade 3SG:

1. Proposed model to predict fiber strength for (Barakat) was:

$$predicted\ fiber\ strength = -147.567 + 279.262 * MR - 12.661 * Mic$$

Where; MR ≡ Maturity and Mic ≡ Micronaire

2. Proposed model to predict fiber strength for (Acala) was:

$$predicted\ fiber\ strength = -204.560 + 239.458 * MR + 1.359 * ML$$

Where; MR ≡ Maturity and ML ≡ Mean length

المـستـخـــلـــص

الهدف من هذه الدراسه هو الفهم الجيد للعلاقه بين طول، نعومة ، نضوجة ومتانه شعيرات القطن .

تم استخدام عينات قطن بركات رتبة GB واكالا رتبة 3SG للموسم الزراعي 2011/2010 . كما تم استخدام جهاز الـ HVI لقياس خصائص شعيرات القطن المذكورة سابقاً. تم تطبيق الارتباطات البسيطه , الجزئيه والمتعددة لدراسه العلاقه بين خصائص شعيرات القطن .

النتائج المتحصل عليها أوضحت أن هناك إرتباط عالى ودال إحصائيا بين نضوجه الشعيره ومتانتها بينما هناك إرتباطات عكسيه بين النعومه والمتانه وبين النعومه والنضوجه. طول الشعيره يرتبط إرتباطا موجبا مع النضوجه وأيضا مع المتانه. تم إستخدام تحليل الإنحدار المتدرج من أجل إنشاء نموذج يمكن أن يتنبأ بمتانه الشعيره. تم التوصل إلى نموذجين للعينتين بركات GB واكالا 3SG هما :

- النموذج المقترح للتنبؤ بمتانه الشعيره فى العينه بركات GB هو:

$$-147.567 + 279.262 * MR - 12.661 * Mic$$

حيث MR ≡ النضوجة. و Mic ≡ النعومة.

- النموذج المقترح للتنبؤ بمتانه الشعيره فى العينه اكالا 3SG هو:

$$-204.560 + 239.458 * MR + 1.359 * ML$$

حيث MR ≡ النضوجة. و ML ≡ الطول.

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