

DEDICATION

To the souls of my father and
my mother

To my wife, my children and my
relatives

To a person inscribed in the
memory.

To Osama, the brave

To the soul of Galal Hamid
Osman, the symbol of clarity
and self - denial who devoted
all his life to the up-grading of
the crop protection in the Gezira
Scheme and the country at
large.

With love and respect

Merghani

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ABSTRACT

Helicoverpa armigera (Hub), *Jacobiasca lybica* (de Berge), *Bemisia tabaci* (Genn.) and *Aphis gossypii* (Glover) were the major cotton insect pests in the Gezira Scheme. Those insect pests were affected by various factors and independent variables most important of which are the weather conditions, the other crops and the pesticides used in the area. Detailed data concerning these factors have been compiled in this work during the period of 1970 to 2003 and were subjected to statistical analysis. The results of this study are intended hopefully to be utilized in forecasting the seasonal severity of these pests.

The following are the important significant correlations: A positive and highly significant correlation is recorded between the African Bollworm (ABW) *H. armigera* and the maximum temperature during the period August – October, mean average temperature during September – January and mean relative humidity (RH) during Sept. – Jan.

A positive and highly significant correlation of Jassid was detected between jassid numbers and mean maximum temperature during September–January and mean average temperature of July–February. Moreover, a negative but significant correlation was shown between jassid numbers and the number of insecticide sprays per

season, the cotton post-sowing rainfall and the total rainfall of the season. Lastly, a significantly positive correlation was detected when jassid numbers were correlated with the areas under groundnut of the same season.

White fly (*B. tabaci*) numbers showed a positive and highly significant correlation with the annual areas grown with cotton, number of sprays/season, both mean average temperature and RH during Aug – Oct., cotton pre-sowing rains, post-sowing rains and total annual rains.

Only two significant relationships between aphid (*A. gossypii*) and the independent variables were recorded. The first one is the positive and highly significant correlation with the annual areas under vegetables. The other one is the positive and significant correlation with the mean minimum temperature during the period Aug – Oct.

بسم الله الرحمن الرحيم

خلاصة الأطروحة

أجري تحليل إحصائي ما بين أعداد الآفات الرئيسية لمحصول القطن بمشروع الجزيرة وهي دودة اللوز الأفريقية والجاسيد والذبابة البيضاء والمن مع عوامل بيئية شتى أهمها: الأمطار، الحرارة، الرطوبة ومساحات محاصيل الدورة الزراعية خلال الفترة ما بين 1970 وحتى 2003 وذلك على أمل إيجاد إرتباطات معنوية سالبة أو موجبة عليها تساعد هذه النتائج في الحصول على معلومات تفيد في التنبؤ والاستعداد لمكافحة الحشرات الاقتصادية.

ما يلي أهم الارتباطات المعنوية التي رصدت ما بين هذه الآفات المذكورة أعلاه وبعض العوامل (المتغيرات المستقلة):

وجدت علاقات ذات ارتباط معنوي عالي وموجب ما بين أعداد دودة اللوز الأفريقية ومتوسط درجة الحرارة القصوي خلال الفترة أغسطس - أكتوبر ومتوسط درجة الحرارة في فترة سبتمبر - يناير ومتوسط الرطوبة النسبية خلال سبتمبر - يناير.

أما العلاقات المعنوية الموجبة ذات الارتباط المعنوي العالي فوجدت ما بين أعداد آفة الجاسيد ومتوسط درجة الحرارة القصوي خلال الفترة سبتمبر - يناير ومتوسط درجة الحرارة في فترة يوليو - فبراير بالإضافة إلى وجود ارتباط معنوي سالب ما بين أعداد الجاسد وعدد الرشاشات في الموسم وأمطار ما بعد زراعة القطن وأيضاً مجموع الأمطار السنوي بمشروع الجزيرة. وفيما يختص بأعداد الجاسد فقد وجد ارتباط معنوي وموجب مع مساحات محصول الفول السوداني في نفس الموسم.

أظهرت ارتباطات أعداد الذبابة البيضاء درجة عالية من الارتباط الموجب مع مساحات محصول القطن وعدد الرشاشات للموسم المعني ومع متوسط درجة الحرارة في الفترة أغسطس - أكتوبر ومع الرطوبة النسبية خلال أغسطس - أكتوبر. ومع الأمطار قبل وبعد الزراعة ومجموع الأمطار السنوية للموسم.

فيما يتعلق بإصابة حشرة الأفسس فقد وجد أن ارتباطان الأول موجب وبدرجة معنوية عالية مع المساحات التي زرعت بالخضر في نفس الموسم. أما الإرتباط

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