

CHAETOTAXY OF LEPIDOPTEROUS LARVAE ASSOCIATED WITH CEREAL AND GRAIN PRODUCTS IN EGYPT

THESIS

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of
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by
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I INTRODUCTION

I N T R O D U C T I O N

Stored food products insects are cosmopolitan. They are seriously causing great damage to food especially cereals, dried fruits, nuts, Cacao, Wheat, maize, cotton seeds, flour, dried onion, dried garlic, sorghum, raddish, tomato seed, figs, raisin, rice, barely, dates, carob pods and sesame.

Stored food insects have been represented in Egypt Since (1912) when Andres recorded in his list Plodia interpunctella (Hübner); Corcyra cephalonica (Staint); Pyralis farinalis (Linnaeus) and Sitotroga cerealella (Olivier) on dried fruits. Gough (1914) recorded Cadra calidella (Guenée) and Cadra cautella (Walker) on dates, while Storey (1916) first recorded Anagasta kuhniella (Zeller) as a pest of dried fruits. Attia (1932) studied the morphology of Sitotroga cerealella (Ol.), Ephestia kuehniella (Zeller), Plodia interpunctella (Hb.) and Corcyra cephalonica (Staint). Hammad (1966-67) studied morphologically Cadra cautella (Walker) and Cadra calidella (Guenée) on dates. Kamel et al (1967), (1973) studied morphologically Anagasta kuhniella, Corcyra cephalonica and Plodia interpunctella.

After a complete survey, material collected from different regions of the country on various hosts. Microscopical preparations were mounted for wings, male and female genitalia, and larvae. Identification had been carried out at the identification service section, plant protection, Research Institute, Ministry of Agriculture.

The scope of the present work is to study in detail the morphological characters of the immature and adult stage of eight lepidopterous species that exist in Egypt: Anagasta . kuhniella (Zeller), Cadra calidella (Guenée), Cadra cautella (Walker), Cadra figulilella (Gregson), Corcyra Cephalonica (Staint), Plodia interpunctella (kubner), Pyralis farinalis (Linnaeus) and Sitotroga cerealella(Olivier).

A Key has been supplied with description, and detailed illustrations that will facilitate the identification of the species concerned on the immature stages.

II REVIEW OF LITERATURE

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(1) Economic importance

Hagan (1930) gave a brief account on Ephestia cautella (Wlk.) and Plodia interpunctella (Hb.), which attacked dried figs in Turkey.

Munro (1930) mentioned that the most important pests of stored Cacao are Corcyra cephalonica (Staint), and Ephestia elutella (Hb.) in London warehouses.

Keifer (1932) showed that Ephestia elutella (Hb.), and Ephestia cautella (Wlk.), act as important pests to Cacao beans in England.

Krishna Ayyar (1934) studied a very destructive pest of stored products in South India, Corcyra cephalonica (Staint.), which caused severe damage in foods, including the seeds of leguminous plants, cotton and cereals, particularly sorghum.

Zacher (1935) observed that the most important pests which infested nut-chocolate, received from various German farms, are Plodia interpunctella (Hb.), Ephestia kühniella (Zeller), and E. elutella (Hb.);

Candura (1939) noted that the chief pests of stored products in North Italy were Plodia interpunctella (Hb.), Ephestia kuehniella (Zell.), and Sitotroga cerealella (Ol.).

Balzer (1943) pointed out the loss caused by insects to stored rice in the United States estimated by over 3 million dollars a year or 10 percent of the total value of the crop. He also mentioned that, Sitotroga cerealella (Ol.), Plodia interpunctella (Hb.), and Corcyra cephalonica (Staint) infested rough rice.

Candura (1944) noticed that the larvae of Plodia interpunctella (Hb.), were the main pests infesting fresh apples and pears in warehouses at Bolzano.

Kundu, Sharma (1975) stated that the larvae of meal - moth Ephestia cautella (Wlk.), form a serious pest of sorghum in Rajasthan India.

Shahjahan (1975) found that Sitotroga cerealella (Ol.), causes considerable amount of damage to unhusked stored rice in Bangladesh.

(2) Morphology

Forbes (1923) pointed out that the larvae of superfamily Pyralidbidea are characterised by the presence of setae Kappa and eta approximately on the same tubercle in all abdominal segments.

Forbes (1923) mentioned that the larvae of family Gelechiidae are characterised by, prolegs with biordinal hooks; second, third, and fourth ocelli not distinctly grouped.

Nicol (1935) described and examined microscopically the genitalia of Ephestia cautella (Wlk.), and Ephestia elutella (Hb.), in Venezuela.

Chernushchev (1944) gave detailed description of the larvae, pupae and adults of rice-moth Corcyra cephalonica (Staint.) in Leningrad.

Mutuura (1956) gave the comparison of names of the setae of thorax and abdomen according to Fracker (1915), Gerasimov (1935) and Hinton (1946).

Knoche (1963) observed variations in both male and female genitalia of Cadra cautella (Wlk.), arriving at the port of Hamburg from different countries.