INSECT FAUNA OF EGYPTIAN CLOVER FIELDS IN THE GIZA REGION, EGYPT

by M.F.S. TAWFIK, S.I. EL-SHERIF
Dept. of Econ, Entomol. and Pesticides, Fac. of Agriculture, Cairo Univ.
and A.H. EL-HENEIDY
Parasite Laboratory, Plant Protection Res. Institute,
Ministry of Agric., Dokki

INTRODUCTION

In Egypt, Egyptian clover, Trifolium alexandrinum L., is the principal forage crop between November and June. Because clover plantations usually receive no insecticidal treatments they are inhabited by numerous insect species of various habits. The present investigation includes a survey of the insect fauna in the fields of clover in the Giza region. Such a survey contributes to the knowledge about the insects associated with clover plantations, and possibly move to other fields in spring and early summer.

PROCEDURE

The survey was carried out in the Agricultural Research Station of the College of Agriculture, University of Cairo at Giza, during the three successive seasons 1971/72-1973/74. For each season, an area of about 5 feddans was seeded with clover by early November. This area received usual agricultural treatments, but no chemical control applications. Between early December (when plants became high enough to permit successful sweeping) and late May (when plants began to dry), 100 full-length double net-strokes were practised at nearly quarter-monthly intervals by crossing the two diagonals of the experimental area. At every date of sampling, samples were taken at 8 a.m., 11 a.m. and 4 p.m. The catch was killed in an ordinary cyanide, jar, then spread on a sheet of white paper for identification.

OBSERVATIONS and DISCUSSION

The survey revealed the presence of at least 93 species belonging to 50 families from 7 orders arranged systematically as follows (species with an asterisk are predators or parasites):

Order Orthoptera


Fam. Tettigoniidae: Phaneroptera gracilis Burm.

Order Hemiptera

Fam. Anthocoridae: Orius spp. (mostly O. laevigatus* Fieb. and O. albidipennis Reut.*).

Fam. Miridae: Deracoris punctulatus Fall.* and Tayloritygus pallidulus Blanch.

Fam. Lygaeidae: Oxycarenus hyalinipennis Costa and Geocoris megacephalus Ross. *

Fam. Pentatomidae: Nezara viridula L. and Eurydema ornatum L.

Fam. Cixiidae: Oliarius frontalLis Mel.

Fam. Cicadellidae: Empoasca decipiens Poall, Balclutha sp. and Macrosteles sexnotatus Fall.

Fam. Aphididae: mostly Aphis laburni Kalt., A. Gossypii Smith and Microsiphum pisi Harris.

Order Neuroptera

Fam. Chrysopidae: Chrysopa carnea Steph.*

Order Lepidoptera

Fam. Pieridae: Pieris rapae L.

Fam. Lycaenidae: Cosmbylyce baeticus L.

Fam. Noctuidae: Spodoptera littoralis Boisd., Spodoptera exigua Hb. and Autographa gamma L.

Fam. Pyralidae: Ostrinia nubifalis Hbn.
Order Coleoptera

Fam. Carabidae: Bembidion sp.
Fam. Staphylinidae: Paederus altieri Koch.*, Platystethus degener Nuls.*, Carpetinus sp. nr. obsus K.* and Tachyporus sp. Er.*
Fam. Dermestidae: Attagenus bifaciatus Gl.
Fam. Tenebrionidae: Scleron orientale F.
Fam. Scarabaeidae: Tropinota squalida Scop.
Fam. Chrysomelidae: Phyllotreta atra var. cruciferae Goeze.
Fam. Bruchidae: Bruchidius trifolii M.
Fam. Curculionidae: Hydera brunneipennis Boh. and Sitona lividipes Fhs.

Order Hymenoptera

Fam. Ichneumonidae: Gelis sp.*, Diplazon sp.*, Casinaria sp. nr. tenuiventris G.*, Mythobia (Angitia) sp.*, Bathyplectes curculionis Thom.* and Barylypa rufa Holmgren*.
Fam. Braconidae: Microplitis sp. (rufiventris) Kok.*, Apanteles sp.? (glomeratus L.)*, Opicus sp.* and Zele chlorophthalma Nees.*
Fam. Pteromalidae: Habrocytus sequester Walk.* and Pteromalus peparum L.*
Fam. Formicidae: Tapinoma sp.
Fam. Vespidae: Vespa orientalis F.* and Polistes gallica L.*
Fam. Pompilidae: Anoplius infuscatus Lind.*
Fam. Sphecidae: Ectemnus laevigatus Dest.
Fam. Apidae: Apis mellifera L. and Andrena sp.

Order Diptera

Fam. Chironomidae: Chironomus sp. and Cricotopus sp.
Fam. Culicidae: Culex sp.
Fam. Mycetophilidae: Macrocera sp.
Fam. Empidae: Platypalpus sp.
Fam. Otitidae: Physiphora demandata Fab.
Fam. Tephritidae: Trupanea amoena Frsl.
Fam. Sepsidae: Sepsis lateralis Wied. and Sepsis thoracica R.D.
Fam. Tethinidae: Tethina sp.
Fam. Agromyzidae: Liriomyza sp.
Fam. Drosophilidae: Scaptomyza pallida Zett.
Fam. Ephydridae: Psilopa flavipalpis Beck.
Fam. Sphaeroceridae: Leptocera sp. and Copromyza sp.
Fam. Tachinidae: Tachina larvarum L.*
Fam. Calliphoridae: Lucilia cuprina Wied.
Fam. Sarcophagidae: Sarcophaga sp.
Fam. Anthomyiidae: Paregle cinerella Fall.
Fam. Caloropidae: Elachiptera flavofrostata Beck.

Observations indicated that commonly occurring insects are Empoasca decipiens, Balclutha sp., Aphis spp., Chrysopa carnea, Paederus alfieri, Coccinella undecimpunctata, Hypera brunneipennis, Sitona lividipes, Syrphus corollae, Scaptomyza pallida, Psilopa flavipalpis, Atherigona theodon and Paregle cinerella.

Insects with frequent occurrence are Orius spp., Pieris rapae, Cosmlyce baeticus, Spodoptera littoralis, Autographa gamma, Scymnus interruptus, Phyllostreta atrata var. cruciferae, Gelis sp., Diplazon sp., Apanteles sp.? (glomeratus), Opis sp., Tapinoma sp., Apis mellifera, Andrena sp., Chironomus sp., Platypalpus sp. Sphaerophoria flavicauda, Xanthogramma aegyptium, Paragus aegyptius, Physiphora demandata, Sepsis thoracica, Sarcophaga sp., Musca sp. and Elachiptera flavofrostata.

Species that occurred in a few numbers are Taylorilygys pallidulus, Ozyccrenus hyalinipennis, Nezara viridula, Macrosteles seznatus, Ostrinia nubilalis,
Bembidion sp., Platystethus degener, Carpellus sp. nr. obesus, Attagenus bifasciatus, Bruchidius trifoli, Nythobia (Angitia) sp., Bathyplectes curculionis, Microplitis sp. (rudicentris), Zele chlorophthalma, Habrocyclus sequester, Trupanea amoca, Liriomyza sp., Leptocera sp., Copromyza sp., Tachina larvarum, Lucilia cuprina, Lispe leucospila and Lispe pectinipes.

Rarely occurring insects are Anacridium aegyptium, Euprepocnemis plorans, Thisioctetus littoralis, Aiolopus strepens, Phaneroptera gracilis, Deraeocoris punctulatus, Geocoris megacephalus, Eurydema ornatum, Oliarius frontalis, Spodoptera exigua, Tachyporus sp., Coccinella septempunctata, Cydonia vicina nilotica, Cydonia vicina isis, Sceleron orientale, Tropinota squalida, Casinaria sp. nr. temivipennis, Barylypa ruja, Pteromalus puparum, Vespa orientalis, Polistes gallica, Anoplius infuscatus, Eulemus? laevigatus, Cricotopus sp., Culex sp., Macrocera sp., Eristalis sp., Sepsis lateralis, Tethina sp. and Muscina stabulans.

Insects that occur in clover fields are of different feeding habits. Anacridium aegyptium, Euprepocnemis plorans, Thisioctetus littoralis, Aiolopus strepens, Phaneroptera gracilis, Pieris rapae, Spodoptera littoralis, Spodoptera exigua, Autographa gamma, Phyllophaga atrata var. cruciferae, Hypera brunneipennis and Siptera lividipes are foliage feeders. Aphids, Nezara viridula and Tayloritypus pallidus suck the sap. Adults of Cosmolyse baeticus, Ostrinia nubilalis, Attagenus bifasciatus, Atherigona sp., Lispe leucospila, Lispe pectinipes, Faregele cinerella, Elachiptera flavofrostata, Lucilia cuprina, Andrena sp. and Apis mellifera visit the flowers for nectar and act as pollinators. Eristalis sp. feeds on pollen and Bruchidius trifoli feed on seeds.

Predators collected from clover fields are Orius spp., Deraeocoris punctulatus, Geocoris megacephalus, Chrysopa carnea, Bembidion sp., Paederus alferii, Platystethus degener, Carpellus sp., Tachyporus sp., Coccinella undecimpunctata, Coccinella septempunctata, Cydonia vicina isis, Cydonia vicina nilotica, Scymnus interruptus, Anoplius infuscatus, Vespa orientalis, Polistes gallica, Platypalpus sp., Syrphus corollae, Sphaerophoria flavicuda, Xanthogramma aegyptium and Paragus aegyptius.

Occurrence of Orius spp. almost coincides with that of their preys, viz. aphids and eggs and young larvae of Spodoptera littoralis. Larvae of Chrysopa carnea prey actively on aphids as well as on the eggs and young larvae of other lepidopterous and coleopterous insects. Bembidion sp., as a ground beetle, may attack Siptera sp. (Andreyanov, 1971). Paederus alferii is the most active staphyliniid on aphids and the eggs and young larvae of Lepidoptera (Abou-Zied, 1972). The role played by other surveyed staphyliniids in clover fields is still undetermined. Coccinella undecimpunctata is also the most active coccinellid on clover and its aphidophagous habit is well-known. C. septempunctata,
Cydona vicina nilotica, C. vicina isis and Scymnus interruptus show the same habit. (Saad, 1969; Hassanen, 1972). Anoplius infuscatus belongs to a group known as spider-hunting wasps (Evans et al., 1953). The predaceous habit of Vespa orientalis and Polistes gallica is also well-known but that of Platypalpus sp. is not certain in clover fields. Syrphus corollae, Sphaerophoria flavicuila, Xanthogramma aegyptium and paragis aegyptius are of considerable importance as predators in clover fields (Tewfik et al., 1974).

Parasite species found in clover fields, in the Giza region, are Gelis sp., Diplazon sp., Casinaria sp., Nythobia (Angitia) sp., Barylupa rufa, Bathypelites curculionis, Micropitius sp. (rufiventris), Apanteles sp. (glomeratus), Opius sp., Zele chlorosphalma, Habrocytus sexquester, Pteromalus puparum and Tachina larvarum. Gelis sp. is a parasite on semi-loopers in Finland (Kanervo, 1974) and on Pieris spp. in Europe (Puttler, 1966). In clover fields in the Giza region, Gelis sp. is almost associated with the same hosts. Diplazon sp. is a hyper-parasite on syrphids in Egypt (Tawfik et al., 1974). Casinaria sp. is parasitic on Lymantria monacha in Germany and on certain insect pests of banana in Costa Rica (Stephens, 1962). The role played by Nythobia (Angitia) sp. is still unknown in Egypt. Barylupa rufa is a larval-pupal parasite of Spodoptera littoralis (Kamal, 1951). Bathypelites curculionis is of limited occurrence in clover fields as a parasite on the larvae of Hypera brunneipennis (Van den Bosch, 1953).

Among the surveyed braconids, Micropitius rufiventris attacks larvae of Spodoptera littoralis in clover fields (Ibrahim, 1974) while the parasitic role of Apanteles sp. is unknown. Opius sp. is parasitic on the larvae of certain tephritids; probably on Trupanea amoena in clover fields, or it is only visiting these fields. Zele chlorosphalma attacks the larvae of S. littoralis (Kamal, 1951). Hafez (1953) mentioned that Tachina larvarum is also a parasite on S. littoralis larvae. Pteromalus puparum was reported as a pupal parasite of Pieris rapae and possibly has the same role in clover fields (El-Ghadir, 1956). The role played by Habrocytus sexquester is still unknown.

Certain minute soft-bodied insects; e.g. Chironomus sp., Cricetenes sp., Culex sp., Macroceria sp., Scecotomyza pallida and Psilopa flavipalpis, drift to clover fields by wind. Adults of Oxyccinus hyalinipennis find a good shelter in clover fields during the hibernation period. However, some of the insect species surveyed from clover fields need further investigation to determine their role and economic importance.

In conclusion, clover fields in Giza seem to harbour at least 35 species which act as natural enemies of certain important insect pests in Egypt. On the other hand, they harbour another group including commonly or frequently occurring pests such as Spodoptera littoralis, Autographa gamma, Pieris rapae,
Sitona lividipes, Hypera brunneipennis, Nezara viridula and Oxyacarus hyalinipennis. Accordingly, biocontrol agents should be manipulated to keep the population of insect pests in clover fields under control. Depending on these agents and minimizing the use of insecticides appear to be safe enough to avoid environmental pollution, feed farm animals on the crop without poisoning hazards, and exclude the catastrophic effect of insecticides on honey-bees visiting clover flowers.

SUMMARY

A survey of the insect fauna of Egyptian clover (Trifolium alexanderinum L.) fields in the Giza region was carried out for three successive seasons (1971/72 - 1973/74). At least 93 species belonging to 50 families from 7 orders could be recorded and are listed systematically. Insects occurring in clover fields are of different feeding habits; foliage, pollen and seed feeders, sap suckers, nectar lappers and pollinators, predators and parasites. At least 35 of the surveyed species are natural enemies of certain important insect pests attacking clover as well as some other economic crops in Egypt.

REFERENCES


HASSANEIN, F.A. (1972) : Studies on certain biological and ecological factors
affecting the population of the cotton leaf-worm, Spodoptera littoralis (Boisd.). (M. Sc. Thesis, Fac. of Agric., Univ. of Cairo).


