

Natural Enemies

NE 1

APHYTIS LINGNANENSIS (HYMENOPTERA: APHELINIDAE) AS AN EFFECTIVE PARASITOID OF DIASPIDID SCALE INSECTS (HOMOPTERA: DIASPIDIDAE) IN EGYPT.

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Aphytis lingnanensis Compre (Hymenoptera: Aphelinidae) is one of the most important parasitoids attacking some armored scale insects in Egypt. Surveys conducted during 2003-2005 in different localities in Egypt showed that, *A. lingnanensis* was associated with eight species of armored scale insects. These are *Aonidiella aurantii* (Maskell), *Aspidotus nerii* Bouche, *Chrysomphalus aonidum* (L.), *Chrysomphalus dictyospermi* (Morgan), *Hemiberlesia latania* (Signort), *Insulaspis pallidula* (Green), *Parlatoria ziziphi* (Lucas) and *Pseudaulacaspis pentagona* (Targioni-Tozzetti). Abundance of *A. chrysomphali* was assessed during 2003-2005 in four localities in Egypt (Behira, Giza, Qalyubiya and Sharqiya governorates). Maximum parasitism rates of *A. lingnanensis* of the above mentioned scale insects ranged between 10-65%. *A. lingnanensis* is an effective parasitoid of *A. aurantii* and *C. aonidum* in Egypt.

NE 2

LARVAL PARASITOID OF THE POTATO TUBER MOTH *PHTHORIMAEA OPERCULELLA* IN POTATO AND TOMATO.

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Larval parasitoids of the potato tuber moth, *Phthorimaea operculella* Zell. were surveyed in potato and tomato fields in Menofyia Governorate in 2003. Three species were found to attack *P. operculella* larvae infesting potato plants; the endoparasitoids, *Apanteles litae* var. *operculella* Nixon and *Diadegma molliplum* Hlmgren. and the ectoparasitoid, *Bracon instabilis* Marshal. Meanwhile, only *B. instabilis* was found to attack the larvae infesting tomato leaves. Parasitism level in potato fields averaged 10.8, 5.6 and 2.6% by *B. instabilis*, *A. litae* and *D. molliplum*, respectively. The total rate of parasitism by the three species ranged from 11.0 to 28.6% with an average of 19.1% in potato field, while it ranged from 0.0 to 21.4% in tomato fields with an average of 11.1% by *B. instabilis*.

NE 3

BIOLOGICAL AND MORPHOLOGICAL STUDY ON THE PARASITOID *MONORTHOCHETA NIGRA* AS A CONTROLLING AGENT FOR THE SUGAR-BEET BEETLE *CASSIDA VITTATA*.

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In Egypt, the most important endoparasitoid attacking eggs of *C. vittata* was *M. nigra* on sugar beet plants under laboratory conditions of 20 and 25°C temperature and 75-85% relative humidity. The morphology of the different developmental stages, the larval instars (first, second, third) pre-pupa and the pupal stages were described. The life cycle of the parasitoid, from egg deposition to the adult emergence was 22-28 days under laboratory conditions (20±5°C and 55±5% R.H.). On the other hand, at 20°C and 75% R.H., the life cycle of the parasitoid lasted 19-22 days, whereas it was 14-19 days at 25°C and 75% R.H. However, at 20°C and 85% R.H., the life cycle lasted 17-19 days and decreased to 13-17 days at 25°C and 85% R.H.

NE 4

EVALUATION OF CERTAIN EXOTIC APHID PARASITOID SPECIES AGAINST CEREAL APHIDS UNDER LABORATORY, FIELD CAGE AND OPEN WHEAT FIELD CONDITIONS.

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Aphids attack cereal crops, particularly wheat, barley and corn in many countries worldwide. Aphid parasitoids' importation and colonization have a great potential as a classical and effective biological control method. Through an Egyptian/American collaborative project (1997-2002), four cereal aphid exotic parasitoid species were imported from different countries, against key cereal aphid species in Egyptian and American wheat fields. The exotic cereal aphid parasitoid species were collected from Syria, Morocco, and Iran, in localities near the reported areas of the origin of cereal species and from habitats of climatic patterns

similar to those in Upper Egypt and Southern California, USA. *Aphidius matricariae* Haliday (Syria), *Diaeretiella rapae* M'Intosh (Morocco), *Aphidius rhopalosiphi* De Stefani (Hymenoptera: Aphidiidae) and *Aphelinus albipodus* Hayat & Fatima (Hymenoptera: Aphelinidae) (Iran) were the parasitoid species introduced and evaluated under laboratory, field cage and open wheat field conditions. The exotic parasitoid species showed different performances under several tested conditions. *A. matricariae* exceeded the other parasitoid species under similar conditions.

NE 5

NEW RECORD FOR THE PARASITOIDS OF THE PUMPKIN FLY, *DACUS CILIATUS* (LEOW) AND THE PEACH FRUIT FLY, *BACTROCERA ZONATA* (SAUNDERS) IN EGYPT. Badr El-Sabah A. Fetoh, Plant Protection Research Institute, ARC, Dokki, Giza, Egypt, Email: badrelsabah@yahoo.com

Survey for the parasitoids which attack the pumpkin fly, *Dacus ciliatus* and the peach fruit fly, *Bactrocera zonata* was conducted in Giza governorate, Egypt. Both flies appeared recently in Egypt without any earlier record for their natural enemies. In the present study, three hymenopterous parasitoids were identified: *Dirhinus griffic* (Chalcididae), *Spalangia cameroni* and *Pachycrepoides videmmia* (Pteromalidae). The parasitism rate of these parasitoids was calculated among vegetables such as white gourd, striped gourd, marrow, cucumber and luf, and among fruits such as peach, mango, guava, sour orange and mandarin. The highest parasitism rate was 13.3% on white gourd, and the lowest parasitism rate was 0% on luf. The highest parasitism rate on fruits was 9% on peach and the lowest parasitism rate was 3.6% on orange. Generally, these parasitoids occur during the active period of the pumpkin fly, *Dacus ciliatus* from July till February and then infest the peach fruit fly, *Bactrocera zonata* which is found in large numbers.

NE 6

A STUDY ON THE MORPHOLOGY AND BIOLOGY OF THE PARASITOID *ENCARSIA PORTERI* MERCET. H. Sakenin Chelav¹, H. Ghahari², M. Tabari³ and S. Abd-Rabou⁴. (1) Ghaemshahr Branch, Islamic Azad University, Mazandaran, Iran, Email: hchelave@yahoo.com; (2) Department of Agriculture, Shahr-e-Rey, Islamic Azad University, Tehran, Iran, Email: h_ghahari@yahoo.com; (3) Rice Research Institute, Amol, Iran; (4) Plant Protection Research Institute, Ministry of Agriculture, Dokki, Giza, Egypt, Email: shaaban59@yahoo.com

Morphology, biology, and behavior of *Encarsia porteri* Mercet (Hymenoptera: Aphelinidae) were studied in a greenhouse at 24±2 °C, 65±5 RH% and 16:8 hr (L: D) photoperiod, on *Gossypium hirsutum* L. var. *ultan*. Morphological study was separately conducted for the male and female adults and larvae. Six life stages including, egg, three larval instars, pupa and adult were identified for the parasitoid. Among the different species of whiteflies (Homoptera: Aleyrodidae) and their live stages, the second nymphal stage of *Bemisia tabaci* Gennadius and fourth nymphal stage of *Trialeurodes vaporariorum* Westwood were preferred. The mated females parasitized both 2nd nymphal stage of *B. tabaci* and the egg of *Heliothis armigera* Huebner (Lepidoptera: Noctuidae), but unmated females parasitized only the moth's eggs. On the basis of the present research, *E. porteri* was found a parasitoid wasp, neither hyperparasitoid nor auto-hyperparasitoid. Host hemolymph and solution of 15% honey-syrup caused the highest effect on longevity and efficiency of mated and unmated parasitoid females. Longevity and fecundity of mated females was significantly higher than unmated ones. The best release ratio of parasitoid to second nymphal stage of *B. tabaci*, and moth's egg was 1-25 and 1-15, respectively. Mating and oviposition behavior of the parasitoid were also studied.

NE 7

THE FAUNA OF THE PARASITOID *ENCARSIA FOERSTER* IN GUILAN PROVINCE OF IRAN. H. Sakenin Chelav¹, H. Ghahari² and A. Abd-Rabou³. (1) Ghaemshahr Branch, Islamic Azad University, Mazandaran, Iran, Email: hchelave@yahoo.com; (2) Department of Agriculture, Shahr-e-Rey, Islamic Azad University, Tehran, Iran, Email: h_ghahari@yahoo.com; (3) Plant Protection Research Institute, Ministry of Agriculture, Dokki, Giza, Egypt, Email: shaaban59@yahoo.com

During surveys conducted from 1999 to 2004 to collect and rear whiteflies (Homoptera: Aleyrodidae) and scale (Homoptera: Coccoidea) insects, in different regions of Guilan province of Iran, 18

species of *Encarsia* Foerster (Chalcidoidea: Aphelinidae) were collected and identified. The identified species were *E. acaudaleyrodis* Hayat, *E. aurantii* (Howard), *E. azimi* Hayat, *E. berlesei* (Howard), *E. citrina* (Craw), *E. elegans* Masi, *E. elongata* (Dozier), *E. fasciata* Hayat, *E. formosa* Gahan, *E. inaron* (Walker), *E. lounsburyi* (Berlese & Paoli), *E. lutea* (Masi), *E. luteola* Howard, *E. perniciosi* (Tower), *E. protransvena* Viggiani, *E. smithi* (Silvestri) and *E. sophia* (Girault & Dodd). Four species including, *E. luteola*, *E. protransvena*, *E. smithi*, and *E. sophia* are new records for Iran. In the present study, in addition to the introduction of *Encarsia* spp. from Guilan province, the new species were described and the taxonomic figures were drawn.

NE 8

STUDY OF THE BIO-EFFICIENCY AND THE MOST IMPORTANT BIOLOGICAL INDICATORS OF THE PARASITOID *ANAGYRUS AGRAENSIS* SARASWAT, AND SELECTING THE OPTIMAL METHODS OF REARING IT ON CITRUS AT THE SYRIAN COAST. Nadia Al-Khateeb¹ and Louai Asslan². (1) Directorate of Agriculture and Agrarian Reform of Lattakia, Center for Rearing Natural Enemies, P.O. Box 2012, Lattaki, Syria, Email: nadia@arabscientist.org; (2) Faculty of Agriculture, Damascus University, Damascus, Syria, Email: louai@arabscientist.org

The study was carried out in 2001-2002 at Lattakia Center for Rearing Natural Enemies. Infested samples with Pseudococcidae (*Planococcus citri* Risso, *Pseudococcus comstocki* Kuwana and *Pseudococcus adonidium* Linn.) were collected from citrus orchards and gardens. The parasitoid *Anagyrus agraisis* (Hymenoptera: Encrtidae) was identified by the British Museum during 2001. The highest population the parasitoid *Anagyrus agraisis* was found in June. The parasitoid was isolated and reared under laboratory conditions using different Pseudococcid species and by using potato as the host plant. The generation duration, sex ratio, and the longevity of the parasitoid on each species of Pseudococcidae were determined. The results showed that the generation duration for the mentioned parasitoid are 18.8 ± 2.77 , 19.4 ± 1.82 and 20.2 ± 1.92 days. The longevity of males on three Pseudococcidae species reached 9.8 ± 1.75 , 8.60 ± 1.51 and 8.9 ± 2.23 days and for females reached to 10.4 ± 2.07 , 9.1 ± 2.13 and 9.4 ± 1.71 days, respectively. The sex ratio was 1:1 under normal conditions, and the correlation between the *Anagyrus agraisis* population and temperature was negative and low ($r = -0.13$), whereas the correlation (r) with relative humidity was -0.58 .

NE 9

MORPHOLOGICAL OBSERVATIONS AND BEHAVIOUR OF *PTEROMALUS PUPARUM* L. PARASITE ON *PAPLIO DEMOLEUS* L. WITH SPECIAL EMPHASIS ON KURDISTAN REGION. Feyroz R. Hassan and Talal T. Mahmoud, Department of Forestry, College of Agriculture, University of Dohuk, Kurdistan Region, Iraq, Email: feyrozrh77@yahoo.com

The present study focus on the morphology, behaviour and the parasitism rate in the field and laboratory of the parasite *Pteromalus puparum* L. on the *Paplio demoleus* L. The results showed that the parasite female laid their eggs gregariously inside the host larval body. After hatching, the parasite larvae developed and fed on the host content until pupation of the host insect, and then developed to pupae. Adults emerge through holes made at various places of the host pupal body, leading to its death. The average number of eggs laid by the parasite was 27.77 egg/larvae in the field and 208.38 egg/larvae under laboratory conditions, with a parasitism rate of 72.5% and 100%, in the field and the laboratory, respectively.

NE 10

BIOLOGICAL STUDIES ON THE PARASITOID *DOLICHOGNIDA TRACHALUS* (NIXON), COLLECTED FROM THE OLIVE BUDS MOTH (JASMINE MOTH) *PALPIA UNIONALIS* HÜBNER IN SYRIA. Mahmoud Sabri Lababidi, Department of Plant Protection, Faculty of Agriculture, University of Aleppo, P.O. Box 12052, Aleppo, Syria, Email: mslababi@scs-net.org

The biological studies revealed that the female parasitoid *Dolichognida trachalus* (Nixon) (Hymenoptera: Braconidae) deposited a single egg internally in the young host larva of *Palpia unionalis* Hübner (Lepidoptera: Pyralidae). The full-grown parasitoid larva emerged from the fourth instar host larva for pupation. The duration of the life cycle ranged from 10 to 15 days, under an average laboratory temperature 25°C and 65% RH. The incubation- and the larval period ranged from 5 to 9 days, and the

pupae period from 4 to 6 days at of 25°C and 65% RH. The adult longevity of both sexes ranged from 8.6 to 15.8 days at 15-30°C and 60-70% RH. The sex ratio (female: male) was approximately 1:0.8 under laboratory conditions. Parasitism rate differed greatly within any given year, among years, and localities. It may be concluded that this parasitoid, among other factors, did play a role in the regulation of its host population density.

NE 11

SURVEY AND SEASONAL FLUCTUATION OF PARASITOIDS OF CITRUS LEAF MINER (*PHYLLOCNITIS CITRELLA* STANTON) IN THE SYRIAN COAST. Kais Ghazal, Lattakia Centre for Insectary and Reared Natural Enemies, Agriculture Department of Lattakia, P.O. Box 3100, Lattakia, Syria, Email: Kaisgazal@shufbc.com

A survey of citrus leaf miner parasitoids conducted during 2003-2005 indicated the presence of four parasitoids. The parasitoid *Semiolacher petiolatus* Girault imported from Australia in 1995 was the most common, and its relative occurrence was 87.34%, 93.54% and 98.45% in the three years, respectively. The relative occurrence of the local parasitoid *Ratzeburgiola incompleta* was 10.98%, 4.1% and 0.77% in the three years, respectively. Whereas, the rest of local parasitoids were rare. The relative occurrence of the local parasitoids *Citrostichus phyllocnistoides* Narayanan was 0%, 0.93% and 0.38% and that of the local parasitoid *Neochrysocharis Formosa* was 0.56%, 0.19% and 0%, respectively, in the three years.

NE 12

STUDY OF SOME BIOLOGICAL PROPERTIES OF EGG PARASITOID *OOENCYRTUS* SP. Khaled Mohamed Mardini¹ and Adel Al Yahri². (1) Insects of the Qatari Environment Project, Friends of the Environment Center, P.O. Box 1822, Doha, Qatar, Email: kmardini62@hotmail.com; (2) Ministry of Municipal Affairs and Agriculture, Doha, Qatar.

About 56 species of *Ooencyrtus* sp. (Encyrtidae: Hymenoptera) distributed worldwide, are very small parasites which attack eggs of various insects, mainly of Lepidoptera and Hemiptera. The parasitoid attacks the eggs of a lasiocampidae species, which feeds on leaves of *Conocarpus* sp. planted in Doha city. Results showed that: (a) the parasitism rate was 20% in the first generation, and reached 75% in the late generation, (b) One host egg gave 6.05±0.55 parasitoid adults, (c) sex ratio was 61.9 : 38.1% female to male, (d) adults' longevity was 26.5 days for females and 27.4 days for males (when they were fed on honey). Fastinglongevity was 3.7 days.

NE 13

PRELIMINARY STUDY ON BIOLOGY AND PARASITIC ABILITY OF *RATZEBURGIOLA INCOMPLETA* BOUCEK A PARASITOID OF CITRUS LEAF MINER *PHYLLOCNISTIS CITRELLA* STANTON. Amal N. Al-Khalidy, N.N. Hama, N.J. Humaidh and Ameara N.Hassan, National Centre of Integrated Pest Management, State Board of Agriculture Research, Ministry of Agriculture, Baghdad, Iraq, Email: alasady61@yahoo.com

Sour orange (*Citrus aurantium*) seedlings, 1-2 years old, were used for artificial infestation with citrus leaf miner (CLM) *Phyllocnistis citrella* in Abughraib (Baghdad) during 2004–2005. These seedlings were kept inside a shade house with semi controlled temperature and relative humidity. Polyethylene covers and saran nets were used in winter and summer, respectively to ensure the provision of suitable conditions inside the shade house. After infestation with CLM, the adult parasitoids of *Ratzeburgiola incompleta* were released continuously to establish an active colony of CLM in order to use it in the following experiment. The life history of the parasitoid was studied under laboratory condition at 22±2°C, relative humidity 60-70% and a photo period of eight hours light and 16 hour darkness. The average incubation period of eggs, the larval stage, the pupal stage and the adult life span were 17, 49, 79 and 145 days, respectively. The results also showed that the adult females of the parasitoid had the ability to mate and lay eggs even if they stored for 40 days at a temperature of 5±2°C. The release of parasitoids in different numbers reduced the density of CLM in the breeding cages.

NE 14

SOME BIOLOGICAL CHARACTERISTICS OF TWO SUNN PEST EGG PARASITOIDS (*TRISSOLCUS GRANDIS* THOMSON) AND (*TRISSOLCUS VASSILIEVI* MAYR) UNDER LABORATORY CONDITIONS. Abdul Nasser Trissi¹, Mohammed Abdulhai² and Mustapha El-Bouhssini³. (1) Faculty of Agriculture, Aleppo University, Aleppo, Syria; (2) General Commission for Scientific Agricultural research, Aleppo Center, Aleppo, Syria, Email: mohamad_abdulhai@yahoo.com; (3) ICARDA, P.O. Box 5466, Aleppo, Syria, Email: M.Bohssini@cgiar.org

The biology of two species of Sunn pest (*Eurygaster integriceps* Put.) egg parasitoids, *Trissolcus grandis* Thomson and *Trissolcus vassilievi* Mayr (Scelionidae: Hymenoptera), was investigated under laboratory conditions (23±2°C, RH 60-70%, 16:8 D:L photoperiod) in 2005. Female longevity was 20 and 13 days, the mean number of parasitized eggs /female was 118 and 100 eggs, the average percent hatch of parasitized eggs was 87 and 85%, the average percent of females was 89 and 87%, the mean developmental time of females from egg laying to emergence was 13 and 12 days and that of males was 12 and 11 days for *T. vassilievi* and *T. grandis*, respectively. These results indicated some superiority of *T. vassilievi* over *T. grandis* because of its capability of parasitizing a significantly higher number of Sunn pest eggs as a result of longer female longevity.

NE 15

THE EFFECT OF TEMPERATURE ON SOME BIOLOGICAL CHARACTERS OF *TRISSOLCUS VASSILIEVI* MAYER, AN EGG PARASITOID OF SUNN PEST (*EURYGASTER INTEGRICEPS* PUTON.). Abdul Nasser Trissi¹, Mustapha El-Bouhssini² And Ahmad Kzaez¹. (1) Faculty of Agriculture, Aleppo University, Aleppo, Syria, Email: n-trissi@scs-net.org; (2) ICARDA, P.O. Box 5466, Aleppo, Syria, Email: M.Bohssini@cgiar.org

Trissolcus vassilievi Mayer (Hymenoptera: Scelionidae), is an important egg parasitoid of Sunn Pest (*Eurygaster integriceps* Puton.). This natural enemy and other scelionids suppress Sunn Pest population in wheat fields. The effect of different temperatures (20, 23 and 26±1°C) on some biological characterization of adult parasitoids was investigated under laboratory conditions, using eggs of Sunn pest as host. Fecundity tended to be higher at higher temperatures. The total number of eggs per female was 65 and 92 eggs at 20°C and 26°C, respectively. The development period for females ranged from 11.1 days at 26°C to 21.2 days at 20°C. The average female longevity was 25.3 and 17.8 days at 20°C and 26°C, respectively. These results indicated that temperature had a significant effect on longevity and oviposition periods.

NE 16

BIOLOGICAL STUDY ON THE PARASITOID APHELINUS GOSSYPII (*TIMBERLAKE*) AT THREE DIFFERENT TEMPERATURES. Leena A. Irshaid¹ and Thabit R. Allawi². (1) Department of Biotechnology, Faculty of Agricultural Technology, Al-Balqa' Applied University, Al-Salt 19117, Jordan, Email: Leena@bau.edu.jo; (2) Department of Plant Protection, Faculty of Agriculture, Jordan University.

Aphelinus gossypii (Timberlake) (Hymenoptera: Aphelinidae) is one of the important parasitoids on melon aphid. Biological studies were conducted on this parasitoid under laboratory conditions at three different temperatures 20, 25 and 30°C. Parasitoid adult female preferred to parasitize on first and second aphid nymphal instars at the three temperature regimes. The mean developmental period for parasitoid female was longer than that for male at the three temperatures. They were 13.4, 11.2 and 10.1 days for female with ranges between 12-12.5, 10-10.5 and 9 days for male. The mean longevity of the parasitoid female were 15.10, 10.23 and 2.7 days at 20, 25 and 30°C, respectively. The fecundity was determined by the number of parasitized aphid (as mummies) per female during its life span. Total Fecundity means (mummy/ female) were 107.93, 92.2 and 21.1 at 20, 25 and 30°C, respectively. The daily number of eggs laid was the highest at 25°C. Longevity was shorter at 25°C than at 20°C, but more eggs were laid per day, and total fecundity was not significantly different. Adult emergence rate was higher at 25°C, but not significantly different from that at 20°C, and was lower at 30°C. There was no significant effect of temperature on sex ratio, but when temperature increased female: male ration slightly increased at the tested temperatures. Female numbers was higher than male, with a ratio of 1.5:1. Adult females of the parasitoid was observed feeding on the aphids. The duration of feeding was much longer than the parasitism process.

For host feeding, the mean duration during ovipositor insertion was longer than ovipositional attack, as it took about 8 min., while the mean duration for depositing an egg was 85.9 seconds (1.5 min.) with a range of 25-175 seconds. However, when ovipositor insertion lasted for less than twenty seconds, the parasitism did not succeed. The feeding process is an additional controlling method of aphid by this parasitoid in addition to parasitism. The total number of aphids consumed by adult parasitoid female were 94, 109 and 45, whereas the average daily numbers consumed by the females were 6.184, 10.5 and 16.8 aphids at 20, 25 and 30°C, respectively.

NE 17

COMPARISON OF THE EFFICACY OF *ENCARSIA FORMOSA* (GAHAN) AND *ERETMOCERUS MUNDUS* (MERCET) IN SYRIAN ENVIRONMENT. Randa Abou-Tara¹, Fawzy Samara², Majd Jamal² and Fawzy Shalaby³. (1) General Commission of Scientific Agricultural research, Douma, P.O. Box 113, Damascus, Syria, Email: randaaboutara@hotmail.com; (2) Faculty of Agriculture, Damascus University, Syria; (3) Zakazik University, Egypt.

The efficacy of *Encarsia formosa* (Gahan) and *Eretmocerus mundus* (Mercet) was studied under field conditions in 2004- 2005. The insect host of both parasitoids was *Bemisia tabaci* and the host plant was *Lantana camara*. The rate of parasitism was recorded at intervals of 15 days, the maximum and minimum daily temperatures were also recorded and the mean temperature of the fifteen days was calculated. The highest parasitism rate for *E. Formosa* was recorded in November 2004, it reached 70.54%, and the lowest was 16.07% and it was recorded in August 2004. Similarly, the highest parasitism rate of *E. mundus* was recorded in October 2004 and it reached 68.81%, and the lowest was recorded in August 2004. Both parasitoids attacked whitefly in winter (Winter parasitism), this, in addition to the high rate of parasitism, indicates to what extent these parasitoids are adopted to the Syrian environment.

NE 18

HYPERPARASITOIDS OF SCALE INSECTS (HOMOPTERA) IN EGYPT. Shaaban Abd-Rabou, Plant Protection Research Institute, Agriculture Research Center, 7 Nadi El-Seid, Dokki, Giza, Egypt, Email: shaaban59@yahoo.com

Survey for hyperparasitoids of scale insects (Homoptera: Coccoidea: Diaspididae: Coccidae: Pseudococcidae) was conducted during the period from 2004-2005. During this work ten species of hymenopteran hyperparasitoids were identified. These were: *Ablerus atomon* (Walker), *Ablerus chionaspidis* Howard, *Ablerus clisiocampae* (Ashmead), *Ablerus perspiciosus* (Girault), *Chartocerus subaeneus* (Foerster), *Chartocerus niger* (Ashmead), *Marietta carnesi* (Howard), *Marietta leopardina* Motschulsky, *Marietta picta* (Andre), *Signiphora flavella* Girault. The species belong to 3 genera and 2 families, including Aphelinidae and Signiphoridae. Six of them are recorded for the first time in Egypt.

NE 19

THE IMPACT OF NATURAL ENEMIES IN REGULATING CEREAL APHID POPULATIONS INFESTING WHEAT PLANTS AT UPPER EGYPT. M.A.A. Abdel-Rahman, Plant Protection Research Institute, ARC, Cairo, Egypt, Email: alaaa4@hotmail.com

A five years study (2001-2005) was conducted in Upper Egypt to elucidate the impact of natural enemies on cereal aphid populations. The most common cereal aphid species infesting wheat plants in Upper Egypt were: the greenbug, *Schizaphis graminum* (Rond.) and the oat bird-cherry aphid, *Rhopalosiphum padi* L. Apteran and nymphs mixed population of these species were commonly found at the same location on the wheat plants. The predators associated with cereal aphids were: Coccinellids (*Coccinella undecimpunctata* L. and *Scymnus* spp.) *Orius* spp., *Chrysoperlla carnea*, *Paederus alferii* and some true spiders species. Seven species of primary parasitoids as well as one species of secondary parasitoid were also found. The primary parasitoids were *Aphidius colemani* Viereck, *A. matricaria* Haliday, *Diaeretiella rapae* M'Intosh, *Ephidrus plagiator* (Nees), *Praon necans* Mackauer, *Aphelinus* spp. and *Trioxys* spp. The results indicate that *D. rapae* and *P. necans* were the most important primary parasitoids. However, *Aphidius colemani* and *A. matricariae* could be of economic importance, if the environmental conditions changed in their favour. Meanwhile, the species of *E. plagiator*, *Aphelinus* spp. and *Trioxys* spp. were of little economic importance. Twelve species of Entomopathogenic fungi were identified. Cereal aphids began to infest wheat plants

during the last week of December and developed up to the end of March. The maximum levels were reached during the end of February and the beginning of March. The impact of the above mentioned biological control agents were evaluated in controlling cereal aphid populations in Upper Egypt under natural conditions.

NE 20

NATURAL ENEMIES OF THE ACACIA BAGWORM *AUCHMOPHILA KORDOFENSIS* REBEL (LEPIDOPTERA, PSYCHIDAE) AND THEIR ROLE IN THE NATURAL CONTROL. Mohammed E.E Mahmoud, Ahmed H. Mohamed and Musa A. Ahmed, Crop Protection Research Center, Agricultural Research Corporation, Wad Medani, Sudan, Email: nazeiro@maktoob.com

The Acacia bagworm, *Auchmophila kordofensis* Rebel, is a serious defoliator of *Acacia nubica*. This study was carried out in north Kordofan in 2004 to determine natural enemies of the acacia bagworm and assess their role as control agents. The parasitoids found associated with the acacia bagworm were *Tachina ebneri* Villeneuve, *Eurytoma* spp., *Goryphus nursei* Cameron, *Brachymeria* sp. and three other unidentified hymenopterous species. The mean percent of parasitism by both *Tachina ebneri* and *Eurytoma* spp reached 24.5%. Predation by ants, mainly *Messor galla* and *Catalyphus bicolor*, was 23%. Also several spiders were found preying on the bagworm.

NE 21

MANIPULATION OF THE SEVEN SPOTTED LADY BEETLE, *COCCINELLA SEPTEMPUNCTATA* FOR AUGMENTATIVE RELEASE TO CONTROL THE WOOLLY APPLE APHID, *ERIOSOMA LANIGERUM*. Ashraf A. H. Mangoud, Plant Protection Institute, ARC, Dokki, Giza, 12618, Egypt, Email: ashrafhendy2001@yahoo.com

The woolly apple aphid is a monophagous species and a bark feeder, infesting both the stems and roots of apple trees. The seven-spotted ladybird (*Coccinella septempunctata*) (Coccinellidae: Coleoptera) is an important predator of aphids playing a good role in reducing the population density of *Eriosoma lanigerum* (Aphididae: Homoptera). The predator was released (one time) in early April 2004 and 2005, at Qualubia Governorate. The achieved reductions in aphid population by the end of November were 72.3, 87.3 and 95.5% during 2004, and 77.1, 90.1 and 96.0% during 2005, at release rate of 30, 60 and 90 eggs of *C. septempunctata*/tree, respectively. Therefore, the seven-spotted ladybird, could be used successfully, as an active component in the integrated program for controlling the woolly apple aphid on the apple trees, and consequently minimize insecticides hazards on public health and environment.

NE 22

EVALUATING THE EXTENT OF *COCCINELLA SEPTEMPUNCTATA* RESPONSE TO GENETIC IMPROVEMENT BY RANDOM ALLOGAMY. Louai Asslan¹ and Nadia Al-Khateeb². (1) Faculty of Agriculture, Damascus University, Damascus, Syria, Email: louai@arabscientist.org; (2) Directorate of Agriculture and Agrarian Reform of Lattakia Center for Rearing Natural Enemies, Lattakia, Syria, Email: nadia@arabscientist.org

Coccinella septempunctata was reared by allogamy to convert from the natural local population to a lab population for the purpose of artificially producing *Coccinella septempunctata* and maintaining the numerical values of its biological and morphological indicators. The research was conducted on local *Coccinella septempunctata* progenies collected from fields along the Syrian Coast. The results proved the genetic stability of these progenies through three generations. All statistical differences were non-significant at $P=0.05$. The results indicated the following: (i) Fecundity increased from 98.2 ± 20.8 in P0 to 105.6 ± 20.3 in P2, and the response of this indicator to allogamy was 7.5%; (ii) Predation rate of larva increased from 88.8 ± 2.87 in P0 to 94.8 ± 12.31 in P2, and the response of this indicator was 6.8%. In addition, the values of all the other biological indicators (development period, life continuity indicator, and increase in female body length) was increased.

NE 23

EFFECTIVENESS OF THE PREDATOR *SERANGIUM PARCESETOSUM* SICARD AS A CONTROL AGENT FOR *BEMISIA TABACI* (GENN.). Rafeek Abboud¹, Mohammad Ahamad² and Nabil Abo Kaf². (1) Agricultural Research Center, Lattakia, General Commission of Agricultural Scientific Research, Syria, Email: abboudrafeek@hotmail.com; (2) Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia, Syria.

A study was carried out on the predator *Serangium parcesetosum* (Coleoptera: Coccinellidae) using the cotton whitefly, *Bemisia tabaci* (Homoptera: Aleyrodidae) as prey. The present study aimed to observe length of the feeding time of prey, in addition to determine the effect on prey host plants, and to evaluate the release rate of the predator to control *Bemisia tabaci* Genn. on eggplants in cages. Developmental time at 27°C from oviposition to emergence of adults was 15.9 and 16.5 days on cucumber and tomato, respectively. On the other hand, larvae of *S. parcesetosum* did not survive on tobacco leaves. Handling time increased with stage of whitefly from 125.9 sec for eggs to 53.1 min for fourth instar. Handling time decreased with stage of predator from 125.9 sec for first instar when feeding on the egg to 13.4 sec for fourth instar. The number of different whitefly stages increased in treated cages until the third week, then began to decrease from about 12 immature stages/1 cm² leaf to 0.44 after seven weeks. Whereas, the density of whitefly population in the control treatment increased 3 fold in the same period. The density of the coccinellid larvae reached the peak in the 5th week (6.56±3.9 larvae/plant) in the treatment with 3 adults per plant, and 16.6±7.4 larvae/plant in the treatment with 6 adults per plant. The number of predator adults reached the peak at the end of the 7th week, where it reached 14.1±1.8 and 8.3±0.8 adult/plant in the first and in the second treatment, respectively.

NE 24

PRELIMINARY SURVEY OF THE PREDATOR *ORIUS ALBIDIPENNIS* ON COTTON FIELDS IN MIDDLE OF IRAQ. Amal S. Abdel Razak, Nazar N. Hama, Nedaa S. Abid and Ahmad Atiya Afy, State Board for Agricultural Research, Abu Ghraib, Baghdad, Iraq, Email: amal2004s2000@yahoo.com

Field studies indicated that predator *Orius albidipennis* (Hemiptera: Anthocoridae) was the most dominating predator on cotton plants representing 26.12% of the total number of predators in 2003 and 36% in the 2004. The highest density was recorded during the second week of October when the maximum temperature was 34 °C and the minimum was 27 °C with relative humidity of 44%. The studies indicated also that the predator peak was synchronous with the peak of spiny boll worm *Earias insulana* eggs.

NE 25

PRELIMINARY SURVEY FOR NATURAL ENEMIES ON TOMATO PESTS (INSECTS AND MITES) IN GREENHOUSES IN SYRIA COASTAL REGION. Mohammad Ahmad, Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia, Syria.

A survey of natural enemies in greenhouses was conducted during the 2004/2005 and 2005/2006 growing seasons. The aim of this study was to define natural enemies (parasitoids and predators) that attack tomato pests in greenhouses. The results showed the presence of the following natural enemies: *Eretmocerus mundus* and *Encarsia formosa* (Hymenoptera: Aphelinidae), *Stethorus gilvifrons* (Coleoptera: Coccinellidae), *Aphidoletes aphidimyza*, *Feltiella acarisuga* (Diptera: Cecidomyiidae), *Scolothrips sexmaculatus* (Thysanoptera: Thripidae), *Dicyphus* sp. (Hemiptera: Miridae), *Diglyphus isaea* (Hymenoptera: Eulophidae), *Hyposoter* sp. (Hymenoptera: Ichneumonidae) *Euplectrus* sp. (Hymenoptera: Eulophidae), *Praon* sp. (Hymenoptera: Aphidiidae). Moreover, the population changes of some of these natural enemies were determined. This study will be continued to select the most efficient natural enemies for applied biological control.

NE 26

INVENTORY OF THE PARASITIC COMPLEX OF *PHYLLOCNISTIS CITRELLA* STAINTON IN THE AREA OF MOSTAGANEM, ALGERIA. Malika Boualem and A. Berkani, Plant Protection Laboratory, University of Mostaganem, BP. 300, Mostaganem, Algeria 2700, Email: laboratory-pv@univ-mosta.dz, boualemmalika@yahoo.fr

The biological control is considered as one of the most appreciated strategies to control the populations of *Phyllocnistis citrella* Stainton. An inventory of the natural enemies of *P. citrella* (Lepidoptera : Gracillariidae) was carried out over two consecutive years in various sites of citrus production in Mostaganem and Mohammadia regions. A weekly sampling of 100 contaminated shoots of orange tree was carried out for each site. The results revealed the presence of the following natural enemy species: *Chrysocharis* sp., *Cirrospilus vittatus*, *Cirrospilus pictus*, *Pnigalio mediterraneu* and *Sympiesis gregorie*. The natural enemy species which showed a regular presence during the two years of study with a high frequency, particularly during the hottest months, was *Pnigalio mediterraneus*. The observations showed a high capacity for adaptation in the exotic species *Semiela cheri*. The study also indicated that the most susceptible stage of *P. citrella* to attack by natural enemies were the 2nd larval and nymphal stages.

NE 27

THE STUDY OF THE INFESTATION RATE OF SCALE INSECTS (*AONIDIELLA AURANTII* MASKELL, *LEPIDOSAPHES BECKII* NEWMAN, *PARLATORIA PERGANDII* COMSTOCK) AND THEIR NATURAL ENEMIES ON CITRUS IN THE SYRIAN COAST. Kais Ghazal, Lattakia Centre for Insectary and Reared Natural Enemies, Agriculture Department of Lattakia, P.O. Box 3100, Lattakia, Syria, Email: Kaisgazal@shufbc.com

The armored scale insects are considered as main pests which infest citrus in Syria and the common species in Syria are *A. aurantii*, *L. beckii* and *P. pergandii*. This study aimed to identify the most widely spread insect on citrus. In the 2004/2005 season *P. pergandii* reached the highest infestation rate (72.02%) followed by *A. aurantii* (17.94%) and *L. beckii* (10.02%). In the 2005/2006 season in 7 locations, the infestation rate of *P. pergandii* was 73.62%, *A. aurantii* 18.42% and *L. beckii* 7.94%. There were two parasitoids identified on *P. pergandii* (*Encarsia* spp., *Aphytis* spp.), a third unknown parasitoid, and a predator cheyletid mite. There were four parasitoids on *A. aurantii* and four parasitoids on *L. beckii* (*Encarsia* spp., *Aphytis* spp., *Marietta picta*), one of them was unknown. There were two predators on the three insects (*Chilocorus bipustulatus* Linnaeus and *Rhyzobius* spp.) and a predator Cheletid mite which was also a predator of its own eggs, but was rare.

NE 28

EFFECT OF FERTILIZER TYPE ON THE NUMBER OF PREYS *MYZUS PERSICAE* SULZ. AND *BEMISIA TABACI* GENN. AND TWO PREDATORS *COCCINELLA SEPTEMPUNCTATA* L. AND *C. UNDECIMPUNCTATA* L. ON POTATO YIELD COMPONENTS. Sahil Kawkab Al-Jameel and Suaad Irdeny Abdulla, Plant Protection Department, College of Agriculture and Forestry Mosul University, Mousel, Iraq, Email: nadeemramadan@yahoo.com

The study showed that the type of fertilizer had a significant effect on the mean number of prey (*Myzus persicae* and *Bemisia tabaci*) and predators (*Coccinella septempunctata* and *C. undecumpunctata*) and on potato yield components during the 2003 season at Al Rashidiya and Al Danadan. It was shown that the fertilizer treatment consisting of 86.5 kg N/donom + 20 kg K/donom of potassium and 3 g/litter of foliar application was the best treatment in terms of the highest mean of *M. persicae* and *B. tabaci* and coccinellids in Al-Danadan in 2003. The same treatment gave the best plant and yield of plant height (131.33 cm), number of tubers (18 tuber/plant), plant yield (1313.20 g) and total yield (14.10 tons/donom).

NE 29

A PRIMARY INVESTIGATION ON ALMOND AND PEACH APHIDS AND NATURAL ENEMIES OF *BRACHYCAUDUS AMYGDALINUS* IN AL-ARAB MOUNTAIN, SOUTHERN SYRIA. Wa'el Almatni¹ and Nazir Khalil². (1) Division of Pest Management, Department of Plant Protection, Ministry of Agriculture, Damascus, Syria, Email: almatni@scs-net.org; (2) Division of Animal Biology, Faculty of Biology, Damascus University, Damascus, Syria, Email: khalil-n@scs-net.org

A field study was carried out on aphids that attack almond and peach trees in Al-Arab mountain at Sweida governorate, between 2002 and 2006. Three aphid species were considered as important pests on both crops. They were *Brachycaudus amygdalinus* and *B. helichrysi* (Aphididae: Homoptera) aphids that feed on the young leaves causing stunted growth; and *Pterochloroides persicae* which is a species that attack the bark and excretes large quantities of honeydew. A survey of natural enemies of *B. amygdalinus* was also conducted to study their population dynamics during the 2002, 2003 and 2004 seasons. Thirty predators species were recorded include 15 species in the family Coccinellidae, 4 each in Anthocoridae and Miridae, 3 in Syrphidae, one species each in Chrysopidae and Chamaemyiidae, and one beetle, in addition to one parasitoid in the family Aphidiidae. Some Arachnids were also mentioned to prey on this aphid. Most common predator at the beginning of the season was *Coccinella septempunctata* followed later by *Scymnus (Pullus) subvillosus* and *Hyppodamia variegata*. Most common predator bug was *Orius horvathi*.

NE 30

LABORATORY STUDY ON THE PREDATOR-PREY RELATIONSHIP BETWEEN THE PREDATORY BUG, *ORIOUS LAEVIGATUS* (FIBER) AND THE TOBACCO WHITEFLY, *BEMISIA TABACI* (GENNADIUS). Iyad Taleb Mohammad Abu-Awad and Abdul-Jalil Hamdan, Faculty of Agriculture, Hebron University, Hebron P.O. Box 40, Palestine, Email: ajhamdan@hebron.edu

This study deals with laboratory assessment on the possibility of using the predatory bug, *Orius laevigatus* (Fiber) (Hemiptera: Anthocoridae) as a natural enemy against tobacco whitefly, *B. tabaci* (Homoptera: Aleyrodidae) reared on tomato and eggplant leaf discs under constant climatic conditions of $25\pm 1^\circ\text{C}$, $75\pm 5\%$ R.H and 16L: 8D photoperiods. Results of the present study showed that, both nymphs and adults of *O. laevigatus* were able to feed on both eggs and larvae of *B. tabaci* when reared on tomato or eggplant with preference for feeding on *B. tabaci* eggs more than on larvae. It was also found that, during all nymphal stages, *O. laevigatus* consumed an average of 364.68 (eggs and larvae) of *B. tabaci* when reared on tomato leaf discs and 283.46 when reared on eggplant. In addition, during its adult life span, adult females of *O. laevigatus* consumed an average of 883 (eggs and larvae) when reared on tomato and 455 (eggs and larvae) on eggplant. Results showed that adult longevity and fertility of *O. laevigatus* were greater when fed on *B. tabaci* reared on tomato rather than that on eggplant. It was also found that survival of *O. laevigatus* fitted to Type II when fed on *B. tabaci* reared on tomato but to Type III on eggplant. In conclusion, the present study showed that the predatory bug *O. laevigatus* completed its nymphal development to adult stages and produced new generation when reared on tomato or eggplant leaf discs heavily infested with *B. tabaci* eggs and larvae. This study also showed that the rate of predation and fertility of *O. laevigatus* was affected by the host plant. Finally, further investigations are suggested to be done in the field to enhance the practical use of *O. laevigatus* as a bio-control agent against *B. tabaci* infestation on tomato or eggplant.

NE 31

SURVEY OF AGROMYZID LEAF MINERS (DIPTERA: AGROMYZIDAE), THEIR HOST PLANTS AND NATURAL ENEMIES. Rasmia Al-Muallem and Hanaa Asaad, General Commission of Scientific Agricultural Research, Douma, P.O.Box 113, Damascus, Syria, Email: arasmia@scs-net.org

Agromyzid leafminers (Diptera: Agromyzidae) are important pests of vegetables, field crops and ornamentals in protected culture and open field in Syria. A survey of agromyzid leafminers was conducted in 2000-2001 and it covered all the country except east and north region. The survey showed that agromyzid leafminers are widely distributed in Syria. Three species were recorded: *Chromatomyia horticola* (Goureau), *Liriomyza huidobrensis* (Blanchard) and *Liriomyza trifolii* (Burgess). *Ch. horticola* was the most common species found in all visited locations. It was recorded on 49 plant species but it caused no significant damages because it has only two generations per year and because of impact of the natural enemies which suppressed the population growth and kept it below the economic injury level. *L. huidobrensis* was recorded

on 34 plant species, it caused serious damage on vegetables and ornamentals especially in protected cultures. *L. trifolii* was not widely distributed. *L. huidobrensis* and *L. trifolii* are not indigenous species, probably they were introduced into the country on imported ornamentals. Ten species of parasitoids were recorded: *Diglyphus isaea* Walker, *D. minoens* Walker, *D. poppoea* Walker, *Chrysocharis ainsliei* Crawford, *Chrysonotomyia lyonetae* Ferriere, *Neochrysocharis Formosa* Westwood, *Pediobius acantha* Walker, *Hemiptarsinus* sp., *Halticoptera* sp. and *opius* sp. In addition, three species of predators were identified: *Coenosia attenuata* Stein, *Crossopalpus* sp. and *platypalpus* sp. *D. isaea* was the most important natural enemy, it needs to be thoroughly studied in order to use it in the integrated management programs of leafminers.

NE 32

LABORATORY REARING OF *CHISOPAERLA CARNEA* ON TOBACCO PLANTS. Fedaa Chamsin, Nabeel Abo Kaf and Maher Masre, General Organization of Tobacco, The Research Section, P.O. Box 3100, Lattakia, Syria, Email: kaisgazal@shufbc.com

When reared in the laboratory life span of *Chisopaerla carnea* from egg to adult ranged from 23 to 29 days. The egg hatched after 4-5 days. The larvae stage was 12.5 days, and the nymph stage from 9-12 days. The adult insect stage was 47-51 days. The three larva stages of *Chisopaerla carnea* consumed 149 nymphs of *Myzus persicae*, and females produced an average of 554 eggs during their life span.

NE 33

THE DISTRIBUTION OF THE PATTERNS OF COAGULATION IN SOME INSECT PREDATORS. Talal T. Mahmoud, University of Dohuk, College of Agriculture, Iraq, Email: taherm47@yahoo.com

This study was carried out to find the patterns of coagulation of the haemocytes of the predators, *Syrphus corollae* F., *Coccinella septempunctata* L. and *Chrysopa carnea* L. In syrphid larvae, two categories of haemocytes were observed one was hyaline, and the other haemocyte was small and dark. In the other two species, the small dark haemocyte was the only haemocyte taking part in plasma reaction and coagulation process. The time for complete clotting of the cells was 25 min in the Coccinellid, whereas it was 30 and 40 min in Syrphid and Chrysopid, respectively.

NE 34

MORPHOLOGICAL AND BIOLOGICAL STUDIES ON THE COCCINELLID *PSYLLOBORA BISOCTONOTATA* MUL., A PREDATOR OF POWDERY MILDEWS. Gaidaa Younes¹, Mohammad Ahmad² and Nawal Ali¹. (1) Department of Botany, Faculty of Science, Tishreen University, Lattakia, Syria; (2) Department of Plant Protection, Faculty of Agriculture, Tishreen University, Lattakia, Syria.

The coccinellid *Psyllobora bisoconotata* is found in all regions of the Syrian Coast. The larval and adult stages of ladybird beetles feeds on powdery mildews, which infect many wild and crop plants (weeds, field crops, fruit trees and forest trees). This ladybird appears usually from early April up to the end of November. *P. bisoconotata* was recorded on 56 plant species in the study sites. Morphology and biology of *P. bisoconotata* were studied under laboratory conditions ($C^{\circ}=25\pm 2$, $RH=70\pm 5$, $L:D=16:8$). Insects were reared on *Erysiphe cichoracearum* fungus infecting *Picris* leaves and on *Erysiphe cichoracearum* and *Sphaerotheca fuliginea* on okra and squash leaves. The total period for development from egg to adult was 24.1 ± 2.08 days when reared on *E. cichoracearum* on *Picris* leaves, whereas it decreased to 18.4 ± 1.52 days on *E. cichoracearum* and *S. fuliginea* on squash leaves. The mean longevity was 72.6 ± 46.24 days for female, and 47.25 ± 19.65 days for male on okra. The mean fecundity was 124 ± 81.96 egg/female on *Picris* leaves, 62.45 ± 37.45 egg/female on squash leaves, and decreased to 44.81 ± 18.39 egg/female on okra leaves.

NE 35

MYCETOGLYPHUS QASSIMI AND TYROPHAGUS PUTRESCENTIAE, TWO ACARID MITES RECOVERED FROM PALM FIELDS, FEEDING ON ROOT-KNOT NEMATODE MELOIDOGYNE JAVANICA IN AL-QASSIM AREA, SAUDI ARABIA. Suloiman Al-Rehiyani and Ahmed H. Fouly, Plant Production and Protection Department, Al Qassim University, College of Agriculture and Veterinary Medicine, Buraidah, P.O. Box 1482, Saudi Arabia, Email: alreh@yahoo.com

Two acarid mites *Mycetoglyphus qassimi* Fouly and Al-Rehiyani, and *Tyrophagus putrescentiae* (Schrank) recovered from A date palm field in Al-Qassim area, Saudi Arabia were tested against the root-knot nematode *Meloidogyne javanica* under lab conditions. The life history of both mite species was also studied under controlled conditions of 27°C and 70% RH. The two mites are considered omnivorous, as they fed on three different food sources tested, egg masses *M. javanica*, date palm *Phoenix dactylifera* L. pollens, and fungal propagules of *Aspergillus niger*. Acarid mites successfully completed their life cycle feeding on all types of food tested. Feeding on egg masses of *M. javanica* accelerated their development. Some second stage larvae were observed in the rearing units of *M. qassimi*. Males of both species reached the adult stage before females, and had shorter life span than females. A diet of *M. javanica* eggs was the most suitable food and supported the highest net reproductive rate R_0 (fecundity) for *M. qassimi* while pollen grains were the best for *T. putrescentiae*. The intrinsic rate of natural increase (r^m) was at its highest level when *M. qassimi* and *T. putrescentiae* were provided with egg masses of the nematode, followed by pollen and fungi. Similar trends were observed with the finite rates of increase (e^{rm}). Results showed that *Mycetoglyphus* mite could be an effective biological control agent against egg masses of *M. javanica*.