

PRELIMINARY SURVEY OF ECONOMIC INSECTS AND THEIR INSECT PREDATORS IN NORTHERN IRAQ

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ABSTRACT: A survey to identify economic insects of poplar trees was carried out during 2012 in Erbil province in northern of Iraq. Various sampling techniques were used to collect different stages of insects from all tree parts (root, stem, branches and leaves). The survey revealed the presence of 21 insect species belonging to 4 order and 12 families, including two species reported on poplar for the first time in Iraq; *Chaitophorus albus* M., *Pemphigus bursarius* L., and presence 6 species of insect predators. The intensity of infestation varied from regions to another depending on tree age, agricultural practices and variation in food preferences for poplar trees by insects. The results of field study showed a highest percent by poplar lace bug, *Monosteira unicastata* M.R. on the plant parts of poplar trees, namely, black poplar, *Populus nigra*, euphratic poplar, *Populus euphratica* and hybrid poplar, *Populus euramericana*, with a mean reached (90, 95, 70, 90, 60, 80%), respectively, followed small borer stem, *Melanophila picta* Pall. (30%), and *Capnodis miliaris* K. (20%). While there was a lowest infestation for big borer stem, *Capnodis miliaris* K., and poplar leaf bite, *Japanagromyza* sp., with infestation (10 and 20%) on the euphratic poplar, followed *Melanophila picta* Pall. (20%) and *Japanagromyza* sp.(10%), on Hybrid poplar, respectively. Field study results showed there are different percentage of infestation according to the kind of insect, species of tree and the part of plant that has been infested. In both regions, the poplar lace bug were high infested on poplar trees with a mean (88, 83 and 75%) respectively, followed by, euphratic leaf gall, *Egeirotrioza ceardi* B. (75%), poplar gall aphid; *Pemphigus bursarius* L. (75%), *P. lichtensteini* T. (85%) and poplar leaf aphid, *Chaitophorus albus* M. (78%) on the poplar trees in this study, respectively, while a least infection showed of big borer stem, *Capnodis miliaris* K. and poplar leaf bite, *Japanagromyza* sp., with a mean reached (10 and 13%) on the euphratic poplar, in both region, respectively. On the other hands, results also showed presence numerous insects in the two regions studied, like, poplar leaf worm, *Pseudoteleia squamodorella* A., poplar leaf bond, *Gypsonoma hapalosarca* M., poplar aegeri moth, *Parathrene tabaniformis*, poplar twig bug, *Apodiphus amygdale*, scale poplar insect, *Diaspidiotus caucasicus* B., poplar leaf beetles, *Chrysomela populi*, poplar root beetle, *Anomala dubia* S., poplar root beetle, *Adoretus irakanus* O., small borer stem, *Melanophila picta* Pall., poplar leaf bond, *Nycteola asiatica* K., poplar leaf worm, *Apatele aceris* L., black poplar leaf larva, *Cerura vinula* L., poplar leaf crinkle psyllid, *Camarotoscena speciosa* F.. The results showed a number of predators that attack insects and it is the highest density of predators where a total average 40.0, 53.3 and 33.7 insect on the studied species, while the average of population density for predators where followed, normal ant, *Solenopsis inyicta* (67.5) insect, lady bird, *Coccinella septempunctata* L. (55) insect, syrphis flies, *Syrphus corolla* F. (48.3), predators bug, *Orius laevigatus* F. (45), mantis hours, *Mantis religiosa* L. (27.5) insect and aphid lion, *Chrysopa* spp. (21.6) insect. Generally, in this field survey, the percentage of the

infestation were highly on black, euphratic and hybrid poplar trees in Koysinjaq region with a total average (45, 43, 43%) compared with insect infestations in Taq-Taq regions (42, 53, 37%), respectively.

KEY WORDS: Survey, economic insects, food preferences, poplar, *Populus nigra*, *P. euphratica*, *P. euramericana*, predators, Iraq.

Populus spp. is considered as important economic trees belongs to the family Salicaceae which is distribution in medium, south and north of Iraq (Dawoody, 1979). Poplar wood is used locally for a variety of purposes, mainly as constructional timber in round for village hutments, as poles for shuttering work, paper, pulp, veneer, lumber, particle board and different hand industries (FAO, 1979; Jobling, 1981; Abady, 1988; Kasir & Salih, 1990; Taylor, 2002). Poplars have a rapid growth rate and capable of vegetative propagation, generally, genus *Populus* is represented by three species, black poplar, *Populus nigra*, euphratic poplar, *Populus euphratica* and hybrid poplar, *Populus euramericana* in the both study regions. The productive of poplar trees in Iraq declined because of humans activities, shifting cultivation, heavy grazing, wars and especially effect of insects' infestation on these trees (Robert, 1972; Abdulla, 1988). Researchers in the different parts of the world reported that genus, *Monosteira* spp. were founded on the poplar and almond trees (Abdullah et al., 1980; Awad & Amin, 1983; Moleas, 1985, 1987; Arab, 1996; Mustafa & Al-marroof, 2003; Babolmorad et al., 2006; Ozey, 1997; Ozlem & Halil, 2007). The economic important of insects is attack all species of poplar trees and may lead to their death or decline in quantity and quality of their timbers are poplar lace bug, *Monosteira unicastata* M. R., euphratic leaf gall, *Egeirotrioza ceardi* B., poplar gall aphid, *Pemphigus* spp. T., poplar leaf aphid, *Chaitophorus* spp., poplar leaf worm, *Apatele aceris* L., poplar twig bug, *Apodiphus amygdale*, poplar leaf beetles, *Chrysomela populi*, polar root beetles, *Adoretus irakanus* O., poplar leaf crinkle psyllid, *Camarotoscena speciosa* F., poplar aegeri moth, *Parathrene tabaniformis*, small borer stem, *Melanphila picta* Pall., and big borer stem, *Capnodis miliaris* K., and poplar moth, *Gypsonoma hapalosoroa* Meyr. (Abul-Hab, 1965; Graham, 1965; Herfs, 1974; Swaillem & Amin, 1975, 1977; Wilson, 1979; Swaillem & Al-Marroof, 1981; Zubiari, 1986; Hassan, 2003; FAO, 2003; Al-Marroof & Mohammad, 1997; Al-Marroof & Mustafa, 2004; Mustafa et al., 2011; Mustafa, 2013; Aljubury, 2013). Arab (2003) recorded 15 species of harmful insects and 9 species of predators on poplar trees, *Populus alba* L., *P. nigra* L., hamoui, and *P. nigra* L., italic. in Syria, while Kailidis (1970) in Greece surveyed 91 species of insect pests on poplar trees, 4 species feed on flowers, 3 species on root, 16 species on wood, 15 species on bark, 35 species on leaves, 2 species on shoots, in addition the survey 7 species of predators, Mustafa (2011) who indicated the mortality of lace bug, *Monosteira unicastata* M. R., increased over 90% for all insecticides, Abamaaction, Diazainon and Chemosiden in different concentration after 7 days of treatment under field conditions, and the best insecticide was Abamaaction with concentration 0.3% when compared with the others. Knof (1972) and Robert (1972) reported that spread the numerous of insects pests on polar trees in north of Iraq, like, *Melanphila picta* Pall., *Capnodis miliaris* K., *Monosteira bucatta* Horv., *M. unicastata* M. R., *Chrysomela populi*. AL-Marroof (1977) observed that poplar lace bug, *Monosteira unicastata* M. R. is one of the most injurious pests of colons for black poplar, *Populus nigra*, especially in nurseries and young trees as a result some sap-sucking insects attacking poplar trees in Nineveh governorate by nymphs and adults. These insects injure trees either directly by sucking their sap and robbing them of food and or indirectly by disseminating plant diseases

and making the trees so weak that they can not withstand the attack of the more dangerous borers. Some studies in the Mediterranean regions mentioned the presence 67 species of insect pests on poplar in Turkiye (Sekendiz, 1973), and 60 species in Iran and Middle-East region, including orders, Hemiptera, Coleoptera and Hymenoptera (Chodjai, 1977). The objective of this study is survey for injury insects causing economic loss for poplar trees in northern of Iraq in Koysinjaq and Taq-Taq regions, Erbil province, and planning for their biological control and integrated pest management technique application in the future.

MATERIAL AND METHODS

The field study was carried out on poplar trees grown in the northern of Iraq in two basic sites, namely Koysinjaq and Taq-Taq in Erbil province, monthly sampling was conducted on the poplar trees at the selected site between March and November during the year 2012. In this study 10 trees of each for poplar species, black poplar, *Populus nigra*, euphratic poplar, *Populus euphratica*, and hybrid poplar, *Populus euramericana*, for both study regions were randomly sampled manually from different parts of the trees, stem, shoots, root and leaf. The harmful insects were identified by naked eyes or magnifying lens, in addition to symptoms on the foliage. Samples were examined in plant laboratory by light microscope and identified according to previous classification keys (Baronstev, 1998), depending on scientific references (Robert, 1972; Knopf, 1972; Al-Marouf, 1977; Swailem & Adel, 1977; Swailem & Al-Marouf, 1981). While other samples identified in the Entomology laboratory at Department of Biology, Gazi University, Turkiye. The insects that were not identified by above mentioned ways; the Erbil insect museum was consulted for the purpose of identification, in this study the predators monitored in addition to calculating the percentage of infestation by insects on poplar trees were the height 2 meter, 10 leaves, and 10 branches, all samples taken randomly from each tree and in five different directions (Arab, 2003). Numbering of living insects was done later, the percent of infestation is calculated for each insect by using the following equation (Lashenko & Bavlenov, 1988).

$$\% \text{ Infestation / insect} = \frac{\text{Number of infested parts with insects}}{\text{Total number of examined parts}} \times 100$$

RESULTS AND DISCUSSION

1-Harmful insects.

Table (1) shows the results of field survey for the economic insects in both Koysinjaq and Taq-Taq region in Erbil province in the northern of Iraq during the season of 2012. The major insect pests that were poplar lace bug, *Monosteira unicastata* M. R., on the black poplar, *Populus nigra* with highest infestation on plant parts of poplar trees in both regions were (90, 95, 90, 85%), respectively, followed poplar gall aphid, *Pemphigus lichtensteini* T., (85, 80, 90, 80%) and poplar root beetle, *Adoretus irakanus* O., (75, 80, 85, 70%) respectively, while there was a less infestation for *Cerura vinula* L. (10, 20, 10%), *Capnodis miliaris* K. (20, 10%), small borer stem, *Melanophila picta* Pall. (30, 10%) and *Nycteola asiatica* K., (30, 20%), respectively, these results were in agreement with the finding of Mustafa et al (2011) they showed significant variations between poplar trees for the population density of the poplar lace bug, *Monosteira unicastata* M.

R., and indicated that the black poplar, *Populus nigra* were higher susceptibility to infestation and insect number was more the poplar species, *P. deltoides* and, *P. euphratica*. Arab (2003) reported 24 species belonging to 8 order and 17 families, on poplar trees from Euphrates region including tree species reported on poplar for the first time in Syria; *Pemphigus bursarius* L., *Scipteron tabaniformis* R., and *Polyphylla fullo* L.. These results obtained were in agreement with those of Sarmoveski (1973), and Abassi (2010), they found that black poplar trees high preferable to lace bug, *Monosteira unicastata* M. R., and *M. buccata* H., respectively. Arab (2003) who found that *Pemphigus lichtensteini* T. and *Monosteira unicastata* M. R., are greatest insect pests attacking poplar trees in Syrian Euphrates region in two location, Maskana and Dureyah with infestation reached (93.0, 87.5, 88.9 and 87.0%) respectively. The results of field survey showed many insect pests presented on black poplar, like, *Chaitophorus versicolor* K., *Chrysomelai albus* M., *Parathrene tabaniformis*, *Camarotoscena speciosa* F., *Apatele aceris* L., *Diaspidiotus caucasicus* B. and *Anomala dubia* S. (Table 1). From the data (Table 2) under field conditions, greatest insects attack on plant parts (stem, branches, root and leaf) of euphratic poplar trees, *Populus euphratica* occurred by *Monosteira unicastata* M. R. with infestation percentage reached (70, 90, 85, 80%) followed by *Egeirotrioza ceardi* B. (80, 70, 80%), *Apodiphus amygdale* (30, 60, 50, 65%) respectively. Generally, in this study showed a simple difference between insects infestation on euphratic poplar trees, *Populus euphratica*, by insects were the least infestation occurred by *Capnodis miliaris* K. (10, 10, 10%), followed by *Japanagromyza* sp. (20, 15, 10%), and, *Melanphila picta* Pall. (20, 10, 20, 25%) (Table 2). These results obtained were in agreement with those of Al-Marroof et al. (1981) and Mustafa (1999) they found that *Monosteira unicastata* M. R. were one of the most insects pests on poplar trees in Mosul region. Swaillem & Adel (1977) they found many insect pests on euphratic poplar trees in northern of Iraq. Table (3) showed the different infestation on plant parts of poplar trees in the two survey regions on hybrid poplar, *Populus euramericana*, the highest infestation was *Monosteira unicastata* M. R. (60, 80, 70, 80%), followed *Chaitophorus albus* M., (50, 50, 75, 80%) *Chrysomela populi* (55, 40, 60%), *Adoretus irakanus* O. (35, 40, 50%), *Parathrene tabaniformis* (50, 60, 50%), *Anomala dubia* S. (10, 30, 10, 30, 20%), *Apatele aceris* L. (40, 20, 35%). While the lowest infestation was *Japanagromyza salicifolii* C. (10, 10%) and *Melanphila picta* Pall. (20, 30, 10%), respectively. From above mentioned information and through the field visits to both regions, the results of this study showed that the insect infestation were different according to species of poplar, poplar parts, and the regions, generally, the black poplar, *Populus nigra*, infested mostly by insect pests and highly density followed by, euphratic poplar, *Populus euphratica* and then hybrid poplar, *Populus euramericana*, these results of this phenomenon may be due to occurrence of differences in morphological features of tree leaves for poplar species, chemical components and nutrition content (Al-Marroof & Mustafa, 2004; Al-Mallah et al., 2008). In addition to the insect infestations were variation between two study regions, generally, it was more in Koysinjaq compare to Taq- Taq on the poplar species. In general results of this research indicate that variations in the susceptibility of poplar trees may be due to variation according to the food preferences of poplar species by insects, parts of plant, topography, altitude, and differential environmental factors.

2-Natural enemies.

Table (4) showed different kinds of predators with insects on poplar species namely, normal ant, *Solenopsis inyicta*, lady bird, *Coccinella septempunctata* L., syrphid flies, *Syrphus corolla* F., predators bug, *Orius laevigatus* F., mantis hours, *Mantis religiosa* L. and aphid lion, *Chrysopa* spp., the present results indicated that the normal ant, *Solenopsis inyicta* and lady bird, *Coccinella quinquepunctata* L., were the most common in this study area, the highest of rate of predators were red ant, *Solenopsis inyicta* on black poplar, *Populus nigra*, with a mean reached (75) insect, followed, syrphid flies, *Syrphus corolla* F. (65) insect, and lady bird, *Coccinella quinquepunctata* L., (60) insect, while the lowest number was aphid lion, *Chrysopa* spp., (10, 20), on two poplar species, euphratic poplar, *Populus euphratica* and hybrid poplar, *Populus euramericana*, respectively, followed mantis hours, *Mantis religiosa* L. (20), according to the table (4), the rate of predators number on different poplar species can be a ranged as follows, black poplar, euphratic poplar and hybrid poplar with a mean reached (53.3, 40.0, 33.7) insects, respectively. These results obtained were in agreement with those of Arab (2003) who reported 9 insects belonging to 4 orders and 5 families, including; *Anthocoris ninki* D., *Orius* sp., *Hylicoris* sp., *Chrysopa carnea* S., *Scymnus syriacus* M., *Coccinella quinquepunctata* L., *C. septempunctata* L., *C. undecimpunctata* L. and *Syrphus corolla* F.. Table (5) shows means of predators on poplar trees, red ant, *Solenopsis inyicta* was present at highest density with a mean of (67.5) insect, followed lady bird, *Coccinella quinquepunctata* L., (55), syrphid flies, *Syrphus corolla* F. (48.3) and predators bug, *Orius laevigatus* F. (45), while the least mean were the aphid lion, *Chrysopa* spp., (21.6), mantis hours, *Mantis religiosa* L. (27.5) and predator bug, *Orius* sp., (2.0), respectively. We conclude that most of predators were started their activities in the beginning of April on the poplar species, like, red ant and lady bird were attacked nymph of poplar lace bug, leaf aphid, leaf bite, poplar leaf psyllid and leaf bond and spiders. Al-Marooif & Amin (1986) observed that polar gall aphid, *Pemphigus lichtensteini* T. were one of the important pest attacking black poplar trees, *Populus nigra* L. in Iraq and many aphidophagous predators attacked poplar gall aphid, *Pemphigus lichtensteini* T. during the field survey are *Orius* sp. (75.5%) of the total predators, *Coccinella septempunctata* L. (16.3%), *Scymnus* sp. and *Metasyrphus corolla* F. (2.3%). Likewise, Joran (2010) observed Petiole gall aphid, *Pemphigus populitransversus* on the poplar trees, *Populus* spp. and showed that damages were not significant enough to warrant action, while Ozlem & Halil (2007) also studied the fatty acid compositions of predator *Luridus piocoris*, agents their host *Monosteira unicostata* on olmond trees in Turkey. On the other hand, Al-Marooif (1990) reported that anthocoris bug, *Anthocoris ninki* D., were the most predators attacked poplar Psyllid, *Camarotoscena speciosa* F., in northern Iraq. Joran (2010) detected that control of Cottonwood leaf beetle (*Chrysomela scripta*) by *Bacillus thuringiensis*, its showed some effectiveness in controlling the larvae, horticultural oil may also control the larvae and Imidacloprid and Permethrin will also control them

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Table 1. The Insect pests on the black poplar, *Populus nigra* and their infestation percent in northern of Iraq during season 2012.

Scientific Name of Insects	Order	Family	Damaged plant parts (%)				infestations percent (%)	
			Stem	Branches	Root	Leaf	regions	
							Koysinjak	Taq Taq
<i>Nycteola asiatica</i> K.	Lepidoptera	Noctuidae	-	-	-	30	-	20
<i>Apatele aceris</i> L.	Lepidoptera	Noctuidae	-	-	-	40	20	35
<i>Cerura vinula</i> L.	Lepidoptera	Notodontidae	-	-	-	10	20	10
<i>Parathrene tabaniformis</i>	Lepidoptera	Aegeriidae	-	75	-	-	75	50
<i>Monosteria Unicostata</i> M.R	Heteroptera	Tingidae	-	90	-	95	90	85
<i>Camarotoscena speciosa</i> F.	Homoptera	Psyllidae	-	-	-	50	60	30
<i>Chaitophorus versicolor</i> K.	Homoptera	Aphididae	-	50	-	75	70	75
<i>Pemphigus lichtensteini</i> T.	Homoptera	Aphididae	-	85	-	80	90	80
<i>Pemphigus immumis</i> B.	Homoptera	Aphididae	-	50	-	30	70	80
<i>Diaspidiotus caucasicus</i> B.	Homoptera	Diaspididae	-	70	-	50	65	50
<i>Chrysomela populi</i>	Coleoptera	Chrysomelidae	-	-	-	70	80	50
<i>Adoretus irakamus</i> O.	Coleoptera	Scarabaeidae	-	-	75	80	85	70
<i>Anomala dubia</i> S.	Coleoptera	Scarabaeidae	-	20	40	60	70	40
<i>Melanophila picta</i> Pall.	Coleoptera	Buprestidae	30	-	-	-	10	-
<i>Capnodis miliaris</i> K.	Coleoptera	Buprestidae	20	-	-	-	10	-

Table 2. The Insect pests on the euphratic poplar, *Populus euphratica* and their infestation percent in northern of Iraq during season 2012.

Scientific Name of Insects	Order	Family	Damaged plant parts (%)				infestations percent (%)	
			Stem	Branches	Root	Leaf	regions	
							Koysinjak	Taq Taq
<i>Pseudoteleia squamodorella</i> A.	Lepidoptera	Gelechiidae	-	-	-	30	30	20
<i>Gypsonoma hapalosarca</i> M.	Lepidoptera	Tortricidae	-	-	-	75	60	85
<i>Parathrene tabaniformis</i>	Lepidoptera	Aegeriidae	-	30	-	-	30	50
<i>Monosteiria Unicostata</i> M.R.	Heteroptera	Tingidae	-	70	-	90	85	80
<i>Apodiphus amygdale</i>	Heteroptera	Pentatomidae	-	30	-	60	50	65
<i>Egeirotrioza ceardi</i> B..	Homoptera	Psyllidae	-	-	-	80	70	80
<i>Egeirotrioza verrucifera</i> Long.	Homoptera	Psyllidae	-	50	-	-	40	35
<i>Diaspidiotus caucasicus</i> B.	Homoptera	Diaspididae	-	40	-	30	50	30
<i>Chrysomela populi</i>	Coleoptera	Chrysomelidae	-	-	-	50	30	55
<i>Anomala dubia</i> S.	Coleoptera	Scarabaeidae	-	10	50	40	50	20
<i>Adoretus irakanus</i> O.	Coleoptera	Scarabaeidae	-	-	50	40	45	70
<i>Melanphila picta</i> Pall.	Coleoptera	Buprestidae	20	10	-	-	20	25
<i>Capnodis miliaris</i> K.	Coleoptera	Buprestidae	10	-	-	-	10	10
<i>Japanagromyza</i> sp.	Diptera	Agromyzidae	-	-	-	20	15	10

Table 3. The Insect pests on the hybrid poplar, *Populus euramericana* and their infestation percent in northern of Iraq during season 2012.

Scientific name of Insects	Order	Family	Damaged plant parts (%)				infestations percent (%)	
			Stem	Branches	Root	Leaf	regions	
							Koysinjak	Taq Taq
<i>Apatele aceris</i> L.	Lepidoptera	Noctuidae	-	-	-	40	20	35
<i>Parathrene tabaniformis</i>	Lepidoptera	Aegeriidae	-	50	-	-	60	50
<i>Monosteiria umicostata</i> M.R.	Heteroptera	Tingidae	-	60	-	80	70	80
<i>Chaitophorus albus</i> M.	Homoptera	Aphididae	-	50	-	50	75	80
<i>Chrysomela populi</i>	Coleoptera	Chrysomelidae	-	-	-	55	40	60
<i>Anomala dubia</i> S.	Coleoptera	Scarabaeidae	-	10	30	10	30	20
<i>Adoretus irakanus</i> O.	Coleoptera	Scarabaeidae	-	-	35	-	40	50
<i>Melanphila picta</i> Pall.	Coleoptera	Buprestidae	20	-	-	-	30	10
<i>Japanagromyza salicifolii</i> C.	Diptera	Agromyzidae	-	-	-	10	10	-

Table 4. Insect predators on the Poplar trees in northern of Iraq during season 2012.

Poplar Species	No. of insect predators (%)			No. of insect predators %	Mean / poplar plant
	Scientific Name	Order	family		
<i>Populus nigra</i>	<i>Chrysopa</i> spp.	Neuroptera	Chrysopid	35	
	<i>Syrphus corolla</i> F.	Diptera	Syrphidae	65	
	<i>Mantis religiosa</i> L.	Dictyoptera	Mantidae	35	
	<i>Solenopsis invicta</i>	Vespoidea	Formicidae	75	
	<i>Orius laevigatus</i> F.	Hemiptera	Anthocoridae	50	
<i>Populus euphratica</i>	<i>Coccinella quinquepunctata</i> L.,	Coleoptera	Coccinellidae	60	
	<i>Chrysopa</i> spp.	Neuroptera	Chrysopid	20	
	<i>Syrphus corolla</i> F.	Diptera	Syrphidae	45	
	<i>Mantis religiosa</i> L.	Dictyoptera	Mantidae	20	
	<i>Solenopsis invicta</i>	Vespoidea	Formicidae	60	
<i>Populus euramericana</i>	<i>Coccinella quinquepunctata</i> L.,	Coleoptera	Coccinellidae	55	
	<i>Chrysopa</i> spp.	Neuroptera	Chrysopid	10	
	<i>Syrphus corolla</i> F.	Diptera	Syrphidae	35	
	<i>Orius laevigatus</i> F.	Hemiptera	Anthocoridae	40	
	<i>Coccinella quinquepunctata</i> L.,	Coleoptera	Coccinellidae	50	

Table 5. Means of insect predators on poplar trees during season 2012.

Insect predators		
Scientific name	English name	Mean / insect predators
<i>Chrysopa</i> spp.	Aphid lion	21.6
<i>Syrphus corolla</i> F.	Syrphus flies	48.3
<i>Mantis religiosa</i> L.	Mantis hours	27.5
<i>Solenopsis inyicta</i>	Red ant	67.5
<i>Orius laevigatus</i> F.	Predators bug	45.0
<i>Coccinella quinquepunctata</i> L.,	Lady bird	55.0