

HOST PLANT, DISTRIBUTION AND NATURAL ENEMIES OF THE POMEGRANATE WHITEFLY, *SIPHONINUS PHILLYREAE* (HALIDAY) (HOMOPTERA : ALEYRODIDAE)

SHAABAN ABD-RABOU AND NOHA AHMED

Plant Protection Research Institute, A R C , Dokki, Giza, Egypt

(Manuscript received 1st February 2007)

Abstract

During this work, *Ziziphus spina-christi* (Rhamnaceae) was recorded here as a new host plant for the pomegranate whitefly. Also the parasitoid, *Encarsia lutea* (Masi) (Hymenoptera : Aphelinidae) and the predator, *Scymnus pallidivestis* Mulsant (Coleoptera : Coccinellidae) were recorded here as first records in Egypt. The pomegranate whitefly, *Siphoninus phillyreae* (Haliday) (Homoptera : Aleyrodidae) was recorded on (57) host plant species (28 genera) belonging to 10 families. Family Rosaceae has (25) host species belonging to (11) genera (43% of the host range). Family Oleaceae has (16) host plant species belonging to (5) genera (28% of the host range) while the rest distributed among other families at lesser rates. This species was recorded from (28) countries. As well as, it was recorded associated with (16) natural enemies (three predators and (13) parasitoids) of the world.

INTRODUCTION

The pomegranate whitefly, *Siphoninus phillyreae* (Haliday) (Homoptera: Aleyrodidae) is one of the most important pest attacking orchard trees in the palaeartic region. The heavy infestation by this pest caused to leaf wilt, early leaf drop and smaller fruit (Bellows et al. 1990). In Egypt, the host plants, distribution, parasitoids, predators and biological control studies were carried out by Abd-Rabou, 1997, 1998, 1999, 2001a, 2002, 2003, 2006 and Abd-Rabou & Abou-Setta, 1998. This work aims to record the host plants, distribution and natural enemies of this pest.

MATERIALS AND METHODS

The data of the present work was collected from the available literature. Also the host plants and natural enemies were collected from different localities in Egypt. These data of host plants, distribution and natural enemies have been arranged in alphabetical order.

RESULTS AND DISCUSSION

Survey of host plants, distribution and natural enemies of the pomegranate whitefly, *Siphoninus phillyreae* (Haliday) are the objective of this work.

Host Plants

S. phillyreae is a polyphagous species and was recorded on 57 plant species (28 genera) belonging to 10 families. Family Rosaceae has 25 host species belonging to 11 genera (43% of the host range). Family Oleaceae has 16 host plant species belonging to 5 genera (28% of the host range) while the rest distributed among other families at lesser rates ranged between (1-5 host plant species) (Bellows et al., 1990 and Abd-Rabou, 2001b) including:

Table 1. Host plant family, species and common names infested the pomegranate whitefly, *Siphoninus phillyreae* (Haliday)

Family	Host plant species	Common name
I. Bignoniaceae	<i>Catalpa X chilopsis</i>	Catalpa hybrid
II. Leguminosae	<i>Azalia</i> sp	Pod mahogany
	<i>Cercis occidentalis</i>	Western redbud
	<i>C. siliquastrum</i>	Judas tree
III. Lythraceae	<i>Lagerstroemia indica</i>	Crape myrtle
IV. Magnoliaceae	<i>Liriodendron tulipifera</i>	Tulip tree
	<i>Magnolia stellata</i>	Star magnolia
V. Oleaceae	<i>Fraxinus excelsior</i>	European ash
	<i>F. latifolia</i>	Oregon ash
	<i>F. ornus</i>	Flowering ash
	<i>F. syriaca</i>	Serian ash
	<i>F. uhdei</i>	Shamel ash
	<i>F. uhdei 'Tomlinson</i>	Tomlinson ash
	<i>F. velutina 'Modesto</i>	Modesto ash
	<i>F. velutina var. glabra</i>	Arizona ash
	<i>F. velutina var. coriacea</i>	Western ash
	<i>Ligustrum</i> spp.	Privets
	<i>Olea africana</i>	Wild olive

Table 1. Continuer:

Family	Host plant species	Common name
	<i>Phillyrea latifolia</i> (= <i>Phillyrea media</i>)	Phillyrea
	<i>Syringa hyacinthiflora</i>	Common lilac
	<i>S. laciniata</i>	Cut-leaf lilac
	<i>S. vulgaris</i>	Common lilac
VI. Punicaceae	<i>Punica granatum</i>	Pomegranate
VII. Rhamnaceae	<i>Rhamnus alaternus</i>	Buckthorn
	<i>Ziziphus spina-christi</i>	(Crown of thorns)*
VIII. Rosaceae:	<i>Amelanchier denticulate</i>	Serviceberry)
	<i>Chaenomeles X speciosa</i>	Flowering quince
	<i>Crataegus mollis</i>	Hawthorn
	<i>C. monogyna</i>	English hawthorn
	<i>C. laevigata</i>	Hawthorn
	<i>Cydonia oblonga</i>	Quince
	<i>Eriobotrya deflexa</i>	Golden loquat
	<i>Heteromeles arbutifolia</i>	California Christmas berry
	<i>Malus domestica</i>	Apple
	<i>M. floribunda</i>	Japanese flowering crab
	<i>M. fusca</i>	Oregon crabapple
	<i>Malus 'Hopa'</i>	Crabapple
	<i>Malus 'Red Jade'</i>	Crabapple
	<i>Malus X scheideckeri</i>	Scheidecker crabapple
	<i>Mespilus sp.</i>	Mespilus
	<i>Prunus armeniaca</i>	Apricot
	<i>P. biiireiana</i>	Blue plum hybrid
	<i>P. persica</i>	Peach
	<i>P. salicina</i>	Santa Rosa plum
	<i>P. virginiana</i>	Choke cherry
	<i>Pyracantha sp.</i>	Pyracantha
	<i>Pyrus calleryana</i>	Ornamental pear
	<i>P. communis</i> (= <i>P. sativa</i>)	Pear
	<i>P. kawakamii</i>	Flowering pear
	<i>P. pyrifolia</i>	Japanese sand pear
IX. Rubiaceae:	<i>Cephalanthus occidentalis</i>	Buttonbush
X. Rutaceae:	<i>Citrus sp.</i>	Tangerine
	<i>C. limon</i>	Lemon.
	<i>C. sinensis</i>	Navel orange
	<i>C. sinensis</i>	Valencia orange
	<i>Fortunella sp.</i>	Kumquat

Geographical Distribution

S. phillyrae, a palaeartic species, is widely distributed throughout 28 countries. These are : Austria, Cameroon, Corsica, Czech Republic, Cyprus, Egypt, England, Ethiopia, France, Hungary, Germany, India, Iran, Ireland, Israel, Italy, Libya, Morocco, Pakistan, Poland, Romania, Saudi Arabia, Spain, Sudan, Syria, Switzerland, Yugoslavia, and United States (Arizona, California and Nevada) (Mound and Halsey, 1978; Bellows *et al.*, 1990 and Abd-Rabou, 2001b).

Natural Enemies of the pomegranate whitefly, *Siphoninus phillyrae* (Haliday)

The pomegranate whitefly has the potential to become a serious pest in new environs. However, it has 16 natural enemies (3 predators and 13 parasitoids) and that can control its populations to under economic thresholds (Mound and Halsey 1978, Bellows *et al.* 1990, Viggiani and Mazzone 1980, Viggiani and Battaglia 1983 , Abd-Rabou and Abou-Setta, 1998 and Abd-Rabou and Evans, 2002). These are :

I. Parasitoids of *siphoninus phillyrae* (haloday) tlymeno ptera aphelinidae

Hymenoptera

1. *Coccophagus eleaphilus* Silvestri
2. *Encarsia davidi* Viggiani and Mazzone
3. *E. galilea* Rivany
4. *E. gautieri* (Mercet)
5. *E. inaron* (Walker)
6. *E. lutea* (Masi) (**new record**)
7. *E. pseudopartenopea* Viggiani and Mazzone
8. *E. siphonini* Viggiani and Battaglia
9. *Eretmocerus corni* Haldeman
10. *E. diversicilatus* Silvestri
11. *E. mundus* Mercet
12. *E. parasiphonini* Evans and Abd-Rabou
13. *E. siphonini* Silvestri

II. Predators:

Coleoptera

Coccinellidae

14. *Clitostethus arcuatus* (Rossi)
15. *Menochilus* sp.
16. *Scymnus pallidivestis* Mulsant (**new record**)

REFERENCES

1. Abd-Rabou, S. 1997. Hosts, distribution and vernacular names of whiteflies (Homoptera : Aleyrodidae) in Egypt. *Annals of Agric. Sci., Moshtohor*, 35 (2): 1029-1048.
2. Abd-Rabou, S. 1998. The efficacy of indigenous parasitoids in the biological control of *Siphoninus phillyreae* (Homoptera: Aleyrodidae) on pomegranate in Egypt. *Pan-Pacific Entomologists*, 74 (3): 169-173.
3. Abd-Rabou, S. 1999. Parasitism of *Eretmocerus siphonini* (Hymenoptera : Aphelinidae) in Egypt. *Boll. Lab. Ent. Agr. Filippo-Silvestri* , 55: 27-31.
4. Abd-Rabou, S. 2001a. Role of *Encarsia inaron* (Walker) (Hymenoptera: Aphelinidae) in biological control of some whitefly species (Homoptera: Aleyrodidae) in Egypt. *Shashpa*, 7(2):187-188.
5. Abd-Rabou, S. 2001b. Whiteflies of Egypt : Taxonomy, biology, ecology and means of their control. *Adv. Agric. Res. In Egypt*, Vol. 3 (1): 1-74.
6. Abd-Rabou, S. 2002. Biological control of two species of whiteflies by *Eretmocerus siphonini* (Hymenoptera : Aphelinidae) in Egypt. *Acta Phytopathologica et Entomologica Hungarica*, 37(1-3)257-260.
7. Abd-Rabou, S. 2003. First record of pomegranate whitefly, *Siphoninus phillyreae* (Haliday) (Homoptera : Aleyrodidae) on olive in North Sinai, Egypt. *Egypt. J. Agric. Res.* 81(4): 1577-1579.
8. Abd-Rabou, S. 2006. Biological control of the pomegranate whitefly, *Siphoninus phillyreae* (Homoptera: Aleyrodidae: Aleyrodinae) by using the bioagent, *Clitostethus arcuatus* (Rossi) (Coleoptera : Coccinellidae). *Journal of Entomology*, 3(4): 331-335.
9. Abd-Rabou, S. and M. Abou-Setta. 1998. Parasitism of *Siphoninus phillyreae* (Homoptera : Aleyrodidae) by aphelinid parasitoids at different locations in Egypt. *J. of Hym. Res.*, 7 (1): 57-61.
10. Abd-Rabou, S. and G. Evans. 2002. The *Eretmocerus* Haldeman of Egypt (Hymenoptera: Aphelinidae). *Mitt.internat. entomol.Ver.*27(3/4):115-123.
11. Bellows TS, TD. Paine, K Y. Arakawa, C. Meisenbacher, P. Leddy and J. Kabashimo 1990. Biological control sought for ash whitefly. *California Agriculture* 44: 4-6.

12. Mound, LA and SH. Halsey. 1978. Whitefly of the World. A Systematic Catalogue of the Aleyrodidae (Homoptera) with Host Plant and Natural Enemy Data. British Mus. (Natural History) and John Wiley and Sons, New York, NY. p. 192-193.
13. Viggiani, G. and P. Mazzone. 1980. *Encarsia pseudopartenopea* n.sp., parassita di *Siphoninus phillyreae* (Haliday) (Hom. Aleyrodidae). Bollettino el Laboratorio di Entomologia Agraria 'Filippo Silvestri' 37: 9-12.
14. Viggiani, G. and D. Battaglia.. 1983. Le specie italiane del genere *Eretmocerus* Hald. (Hymenoptera: Aphelinidae). Bolletino del Laboratorio di Entomologia Agraria 'Filippo Silvestri' 40: 97-101.

العوائل النباتية والتوزيع الجغرافي والأعداء الحيوية لحشرة الرمان البيضاء

Siphoninus phillyreae

شعبان عبد ربه ، نها أحمد

معهد بحوث وقاية النباتات - مركز البحوث الزراعية - جيزة - الدقي

تبين من نتائج البحث وجود *Ziziphus spina-christi* كعائل نباتي جديد في مصر، الى جانب تسجيل طفيل ومفترس جديدين على الفونة المصرية وهما *Encarsia lutea* (Masi) فصائل . فصيلة Rosaceae يوجد بها ٢٥ عائل نباتي تتبع ١١ جنس (تمثل ٤٣ % من العدد الكلي للعوائل النباتية) أما فصيلة Oleaceae يوجد بها ١٦ نوعا عائل نباتي تتبع ٥ أجناس (تمثل ٢٨ %) أما باقي الفصائل ممثله بأعداد قليلة من العوائل النباتية . تم أيضا تسجيل هذه الآفة في ٢٨ دولة، كما تم حصر ١٦ نوعا من الأعداء الحيوية مصاحبه لها (١٣ طفيل و ٣ مفترسات) .