HONEYDEW PRODUCING INSECTS IN TEHRAN PROVINCE,IRAN,

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A survey was conducted from 1993 to 1994 for the presence of honeydew producing insects on variaus trees in Tehran province. A total of 56 species from HOMOPTERA order were recorded. Among the collected insects, two aphids species, *Cinaria palaestinensis* (H.R.I.) and *Cavariella archagelicae* (Scoopoli), and one coccid species *Planococcus vovae* (L.) are new record for Iran.

INTRODUCTION

Honeydew has its origin in the sap of plants and is a sweet liquid excreted by Hemipterous insects, principally aphids and coccids. Droplet of honeydew fall on the plant surface, and collected and stored by bees and is generally considered inferior to honey in flavour and quality. Honeydew can be a good source of supplementary food for bees when nectar is not available (Crane, 1990) Honeydew contains 72% sugars, 16% water, 12% other materials, and its pH 5.1-7.9. Honeydew contains sucrose fructose, glucose, and appreciable amounts of trisaccharide sugars

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(melezitose, raffinose, and fructomaltose), some higher saccharide, and also dextrin, and certain enzemes and amino acids not normally found in honey from nectar (Stroyan, 1977 ; Barbattitini & Creatti, 1989 ; Malsen, 1989). In general honeydew quality and quantity depends on insect and the host plants (Carter & Malsen, 1989 ; Powel *et al.* , 1990). The characteristic composition of honeydew is somewhat different from that of nectar, because honeydew contains enzemes derived from the gut and saliva of the plant sucking insect (Carter & Maslen, 1989 ; Crane, 1990). Honeybees collect honeydew from the leaves of oak (*Quercus* sp.), beech (*Fagus* sp.), popular(*Populus* sp.), willow (*Salix* sp.), linden (*Tilia* sp.), cedar(*Juniperus* sp. , spruce (*Picea* sp.), and *Acer* spp.

Honeydew flows are the main source of honey in some parts of the world, for instance in Greece where they provide some 65% of the honey produced (Santas, 1988 ; Crane, 1990 ; Ricciardelli & Albore, 1992). They are especially important in parts of European countries such as Germany, France, Yugoslavia and England (Santas, 1988 ; Oberpfalz, 1988 ; Muzaffer and Ahmad, 1989 ; Crane, 1990 ; Ricciardelli & Albore, 1992); and also used by beekeepers in New Zealand and North America, Pakistan, Turkey and Australia (Muzaffer & Ahmad, 1989; Crane, 1990). The most important sources of honeydew are trees (willow, oak, ... etc.) of these, conifers give the highest yields (Carter & Maslen, 1989 ; Crane, 1990). In parts of Turkey, and Greece, beekeepers extend the range of the honeydew flow by introducing *Marchalina hellenica* (Gennadius) into areas of *Pinus halepensis* Miller without it (Crane, 1990). Carter & Maslen (1989) recorded annual honeydew production on

different trees. The average yield of honeydew was 75kg for *Pinus*, 30kg for *Populus* and 25-30Kg for *Phyllaphis*.

Aphids were the main insects which were producing honeydew in Tehran province. The scientific names of aphids were checked by Lampel list(1993). Although honeydew flows are the main source of honey in some parts of the world, but in Iran, the beekeepers have no experienve of them. This is the first survey on honeydew producing insects in Iran.

MATERIALS AND METHODS

A survey was conducted from 1993 to 1994 for the presence of honeydew producing insects mainly on various trees in Tehran province. Four regions of Tehran, Shamiranat, Damavand and karaj were selected for this study. Infested branches were cut off from the main tree, placed in a polethylene bag and transported to laboratory, where the insects picked up with a fine cammal brush and kept in separate containers in 80% methanol. In the case of annual plants, whole plant was collected. In the absence of adult insects, a section of a branch or annual plant was placed in a vial and kept at laboratory conditions. The plant was replaced every two days. Permenent microscopic slids of insects were prepared according to Bodenheimer & Swirski (1957), Eastop & Blackman (1984).

RESULTS

A total of 56 species from HOMOPTERA order were recorded. Among the collecetd insects, two aphids and one coccid species that are marked with asterisk are new record for Iran. The scientific name

of the insects, their host plants, locations, and production of honeydew are as follows :

low +

medium ++

large amount +++

order HOMOPTERA

Sub. order STERNORRHYNCHA

Super fam. APHIDOIDEA

Fam. APHIDIDAE

Sub. fam.-Tribe **I- Aphidinae-Aphidini**

Scientific name	Host plant	Locatio	Production of honeydew
1 - *Aphis craccivora* Koch	False acacia	T, Sh, K[1]	+++
2 - *A. nasturtii* Kaltenbach	Common buckhtorn	D, Ds, Sht	++
3 - *A. pomi* de Geer	Apple, Pear	T,D,K,Sh,Sht,Ta	++
4 - *A. punicae* Passerini	Pomegrenate	K,Sh	++
5 - *A. ruborum* (Börner)	Black berry	A,D,Ta,Sht	+
6 - *A. umberlla* (Börner)	Black berry, Dog-rose	D,K,L	++
7- *Hyalopterus pruni*(Geoffroy)	Plum tree	D,K,Sht,A,Ta, Shm,Of	++
8 - *Rhopalosiphum maidis*(Fitch)	Sorgum	T	++

1 - *T=Tehran* *Ta=Taleghan* *L=Lavasanat* *Ds=Darbanasar*
K=Karaj *Sh=Shahriyar* *G=Chitgar* *Dr=Darband*
D=Damavand *Of=Oshan fesham* *A=Arengh* *Shm=Shamshak*

9 - *R. nymphae*(L.)	Plum tree, Wild cherry	K,A,Sht,Shm,Ta	+
10 - *Schizaphis graminum*(Randani)		T	++

MACROSIPHINI

11 - *Acyrthosiphon pelargonii*(Kalt)		T,K	++
12 - *A. rosae*(L.)	Rose	T,K,D,Of	++
13 - *Brachycadus (Thuleaphis) amygdalinus* (Schot)	Almond	D,A	++
14 - *B. (Acaudus)* divaricatae(Shap)			
15 - *B. helichrysi* (Kaltenbach)	Plum tree	T,A,Ta	++
16 - *B. periicae* (Passerini)	Plum	Sh	++
17 - *B. (Appelia)* prunicola (Kaltenbach)	Plum	T,Sh,Sht,Shm	++
18 - *Chaitophorus leucomelas* Koch	Popular pine	T,D,A,Ta,Sht,	++
19 - *C. niger* Mordv.	White & Wepin willow	T	+++
20 - *C. populeti* (Panz.)	White popular	T,A,D,Sht,K,Ta	+++
21 - *C. populialbae* (B. d. F.)	White popular	T,A,D,Sht,Ta	+++
22 - *C. salicti* (Schrk)	Wilhelms willow	K,A,Sht,Ar	+++
23 - *Cavariella aegopodii* (Scopoli)	White & Weping willow	T,Sht,K,Ar	++
24 - *C. archangellicae* (Scopoli)	White willow	K,Ar	+++
25 - *Dysaphis crataegi* (Kalt)	Azarole	T,Shm	+
26 - *D. devecta* (Walker)	Apple,Plum Tree	T,A	+
27 - *D.(Pomaphis) plantaginea* (Pass).	Pear	T,A,Sht	+
28 - *D.(Popamphis) pyri* (B. d. F.)	Pear	T,Ta,A	++
29 - *Macrosiphum rosae* (L.)	dog - rose	T,D,Ta,Sht,Shm	++

30 - *Myzus cerasi* (Fab.)	Wild cherry	T,D	++
31 - *M.(Nectarosiphon) persicae* (Sulzer)	Plum tree, Almond	T,A,of,D,Ta	++

II - DREPANOSIPHINAE

32-*Drepanosiphum latanoidis*(Scnrank)	false plane, sycamore maple tree	K.of.D.Sht.Shm. Ta	++

III - LACHNINAE

33 - *Eulachnus agilis* (Kaltenbach)	Black & Scot pine	T,D,Sht,Sh,K, L,Sr	++
34 - *E. releyi* (Williams)	Black & Scot pine	T,D,Sht,L,Sr	++
35 - *Protolachnus tuberculostmata* (Theob)	Aleppo & Persian Pine	T,G,Sr	+++
36 - *Tuberolachnus salignus* (Gamel.)	White willow, Weping willow	T,D,Sht,Ta,Ds,Ar Ar	+++

CINARINI

37 - *Cinara cedri* Mimeur	Lebanan cedar	T	++
38 - *C. juniperina* Mordv.	Savin, Juniper	D,of,Dr	++
39 - *C. palaestinensis* (H.R.I.)	Aleppo & Persian pine	T	++
40 - *C. pilicornis* (Hart)	Colorado spruce, Spruce	T,G,K	++
41 - *C. tujafilina* (del Guercio)	Savin, Persian juniper, Common	D,sht,of,Ds	++

	juniper tree		

LACHNINI

42 - *Pterochloroides persicae* (Chol)	Prunus	T,Ta,D,K,Sh	++

IV - PHYLLAPHIDINAE

43-*Betulaphis quadrituberculata*(Kalt.)	Birch	K,Sht	++
44 - *Myzocallis coryli* (Goeze)	Hazelnut-tree	D,Shm,Ta	+
45 - *M. picta* (Ferreri)	Oak tree	T,K	++
46 - *Panaphis* (*Callaphis*) *juglandis* (Goeze)	Walnut tree	T,Sht,Ta,A,Ds	++
47 - *Tinocallis saltans* (Nevs.)	Common elm	T,D,Sh,Ta,A	++
48 - *T. zelkovae* (Dshibladze)	Siberian elm	Sht	++
49 - *Pterocomma pilosum* Buckt.	White willow, Popular pine	T,A,D,Sht,Ta	+++

COCCOIDEA

I - ASTEROLECANIIDAE

50 - *Asterolecanium phoenicis* (Green)	Plum tree	K,Sh	++

II - COCCIDAE

51 - *Pulvinaria betulae* (L.)	Birch	Sht	++
52 - *Coccus hesperidum* (L.)	Plum tree	K,Sh	++

III - PSEUDOCOCCIDAE

53 - *Planococcus citri* (Risso)	Pomegrenate	T,Sh,K	++
54 - *P. vovae* (L.)	Persian juniper	T,D,K,G,Sr	++

ALEYRODOIDEA

I - ALEYRODIDAE

55 - *Aleyrodes rosae* (M.)	Dog-rose	T,Sh,Ta	++

PSYLLOIDEA

II - PSYLLIDAE

59 - *Psylla pyricola* (Foerster)	Pear	K,Sh	++

DISCUSSION:

Honeydew cna be a good source of supplementary food for bees when nectar is not available as well as a honey flow. Although there are many good honeydew sources in Iran, but our beekeepers have no information or experience of them. This survey can be a start for further study in this field.

The important honeydew producing insects are *Cinara* spp. on *Cedrus* spp., *Juniperus* spp. *and Pinus* that produce large amount of honeydew for a long period especially in autumn. Other aphids such as *Caitophorous* spp. and *Tuberolachus salignus* on *Salix alba*, *S. babylonica* and *S. elbursensis* trees also produc large amount of honeydew from early spring to late summer. The bees can collect a good surplus from early to late summer. The coccid (*Planococcus* spp.) also produce abundant of honeydew on Juniperous as well as fruit trees.

In many parts of Iran, honeydew is produced by different honeydew producing insects on different forest, none forest and fruit trees, however, the pest insects are the target of pesticides applications, and they no longer give honeydew flows where pest

mamagement is effective. But the forest and none forest trees with no pesticides application provide good sources of honeydew flow from early spring to late autumn.

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بررسی حشرات مولدعسلک (Honeydew) در استان تهران

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در سالهای ۷۳-۱۳۷۲ حشرات مولد عسلک درختان مثمر و غیرمثمر در استان تهران جمع آوری و شناسایی شد. رویهمرفته ۵۶ گونه از حشراتی که عسلک زیادی تولید می‌نمایند بشرح زیر شناسایی گردید:

۱ - شته‌ها - ۴۹ گونه، متعلق به ۲۲ جنس و ۵ زیرخانواده .

۲ - شپشکها - ۵ گونه، متعلق به ۴ جنس و ۳ خانواده .

۳ - مگسهای سفید - یک گونه .

از حشرات جمع آوری شده دو گونه شته *Cinara palaestinesis* (H.R.I) و *Cavariella archangelicae* (Scopoli) و یک گونه شپشک *Planococcus vovae* (L.) گونه‌های جدیدی است که برای اولین بار از ایران گزارش می‌گردد.

عسلک (Honeydew) ماده شیرینی است که منشأ آن شیره گیاهی است و توسط حشرات راسته جوربالان مانند شته‌ها و شپشکها که از شیره گیاهان تغذیه می‌کنند ترشح می‌شود. قطرات عسلک در روی قسمتهای مختلف گیاه بخصوص برگها ریزش و غالباً توسط زنبوران عسل جمع‌آوری و ذخیره می‌شود، کیفیت آن از نظر عطر و طعم از عسل پایین‌تر است. عسلک را اغلب روی برگ درختانی مانند بلوط، راش، انواع صنوبر، نارون، افرا، بید، کاج و سایر سوزنی برگها می‌توان مشاهده نمود. مقدار جمع‌آوری آن بستگی به وفور شهد دارد و غذای جانشینی خوبی برای زنبوران در عدم وجود شهد در طبیعت است.

اصل مقاله به زبان انگلیسی تهیه شده است.

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