

Introduction

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Lee (1978)

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Phoenix dactylifera

Pithecellobium dulce

Albizia lebbek *Prosopis juliflora* ()

) *Ficus altissima*

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Dodonea

Clerodendron inerme

Tecoma stans

Bougainvillea sp.

viscosa

Rosa sp.

Cestrum sp.

Lantana sp.

Punica

Hibiscus rosa-sinensis

Thevetia sp.

Jasminum sambac

grandiflora

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Tagetes sp.

Calendula officinalis

Kochia scoparia

Chrysanthemum sp.

sp. *Cosmos*

Dianthus

Zinnia elegans

Celosia sp.

Chatharanthus roseus

caryophyllus

sp.

Cynodon dactylon

Gazania .

Carpobrotus sp.

Ipomoea

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Literature

Review

Aphididae ()

Aphids

.Homoptera

Cornicles

Cauda

Unguis

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.Basal part

.(Borrer *et al.*1981)

(Eastop,1977)

.(Blackman and Eastop,1984)

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Amphigony

Primary Host ()

Secondary Hosts

.Host Alternation

Anholocycl

.(Blackman and Eastop,1984) Secondary Monoecy

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Blackman and Eastop (1984)

Aloe .*Rosa* sp.

. sp

Al-Ali (1977)

Habib and El-Kady (1961)

Mustafa

Harten)

(1985,1986,1988a,1988b,1989)

Muller *et al.* (1977)*et al.* (1994

. Martin (1972)

. Aldryhim and Khalil (1996)

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Stary (1989)

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,*Ephedrus* ,*Monoctonus* ,*Trioxy*s ,*Aphidius* ,*Adialytus* ,*Lipolexis*
Lysiphlebus *Pauesia* ,*Paron* ,*Diaeretiella*

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Aphelinus sp.

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Aphidius sp.

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.Hymenoptera

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Filter Chamber

Sooty Mold

.(Sudd,1989)

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Kaakeh *et al.* (1992)

A. spiraecola

.(Forrest,1989)

M. periscae

Blackman and Eastop (1984)

A. fabae

A. gossypii

A. craccivora

: *A. gossypii*

(Blackman and Eastop, 1984; Akey and

Butler, 1989 and Mackauer and Way, 1976)

(Kerns and Gaylor, 1992)

Tropical

.(Schmutterer, 1969)

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A. gossypii

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.(Aldryhim and Khalil,1993) ()

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Cornicles

Cauda

Tapering

Antennal Tubercles

Unguis

Basal Part

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Blackman and)

Aldryhim and)

(Eastop,1984

Khalil (1996

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Khalifa and El-Din (1964)

(Eissa,1983)

Watt and Brown (1977)

Komazaki (1982)

Aldryhim and Khalil

(1993)

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(Van Emden and Bashford,1969,1971
 . and Prestidge and McNeill,1982)

.(Healthcote 1974 Power 1987 ; Prestidge 1982)
 Petitt *et al.* (1994)

A. gossypii

M. periscae

Villamayor El-Fattah (1975) .
 (1976)
 Kaakeh *et al.* (1992) .

A. spiraecola

(Woolridge and

.Harrison,1968)

Wermelinger *et al.*(1985)

.*Tetranychus urticae*

Rossi and

Carneocephala floridana

Strong (1991)

Harrewijn (1983)

Blencowe and Heathcote (1974)

(1951) Tinsley

.The Sugar Yellow Beet Disease

:

Fereres *et al.* (1988)

Sitobion avenae

Wearing and Van Emden (1967)

Vicia faba

A. fabae

Brevicoryne brassicae

Brassels sprouts

Dorschner *et al.* (1986)

Schizaphis graminum

Sumner *et al.*

S. graminum

(1983 ,1986)

Baugh and Phillips (1991)

Materials and Methods

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Zea mays

Mentha piperita

Sorghum vulgare

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Habib and El-Kady (1961) Blackman and Eastop (1984)

Heie (1986)

G. Remaudiere

F. Ilharco

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Compositae

Cosmos

Calendula officinalis

Gaillardia sp.

sp.

Tagetes sp.

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Binocular

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Correlation Coefficients

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P < 0.05

Pearson

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Cosmos sp.
A. gossypii

Kochia scoparia

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P=0.05

Duncans Multiple Range Test

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Duncans Multiple Range Test

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$p=0.05$

Results

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Aphidini

Aphidinae

.() Macrosiphini

.(Blackman and Eastop, 1984)

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Cornicles

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Flanged ()

Aphis

Tapering

Rhopalosiphum

Lipaphis erysimi

Myzus persicae

Uroleucon *Macrosiphum*

Reticulation

Hysteroneura setariae

Cauda

Cauda

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Brachycaudus helichrysi

Macrosiphum *Aphis*

.Brevicoryne brassicae

Antennae

Basel

Unguis

.() Primary rhinaria

. Brachyunguis tamaricis

Secondary rhinaria

Antennal Tubercles

Aphis

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() *Uroleucon* *Macrosiphum*

.() *M. persicae*

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Brachycaudus ()

helichrysi

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Brevicoryne ()

brassicae

..... ()

Brachyunguis tamarici

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Uroleucon

compositae

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Macrosiphum rosae

Macrosiphum euphorbiae

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Myzus persica

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Lipaphis

erysimi

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Rhopalosiphum maidis

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Melanaphis sacchari

.....

Hysteroneura

setariae

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Aphis craccivora

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Aphis

nerii

Aphis fabae

Aphis nasturtii

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Aphis

punicae

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,
Aphis affinis

,
Aphis gossypii ()

Aphid species

Aphis gossypii

Myzus persicae

Aphis fabae

Macrosiphum euphorbiae

Aphis craccivora

()

Aphidini

:

Aphis

affinis

/ / / / / /
/ / / / *piperita* *Mentha*
 .Ocimum basilicum

Aphis craccivora

	//	<i>Acacia</i> sp.		//	
<i>Ficus</i>			//		<i>Caesalpinia gilliesii</i>
<i>Kochia</i>			//	//	<i>altissima</i>
	//	<i>Mirabilis jalapa</i>		//	<i>scoparia</i>
<i>Parkinsonia</i>			//	//	<i>Oxalis</i> sp.
<i>Pithecelobium</i>				//	<i>aculeata</i>
	//	//	//	//	<i>dulce</i>
			//	//	//
		<i>Tamarix</i> sp.	//		<i>Prosopis juliflora</i>

() Leguminosae

Aphis fabae

<i>Calendula officinalis</i>		//		//
//	<i>Carpobrotus edulis</i>			//

Cestrum noturnum

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<i>Chrysanthemum</i> sp.		/ /	
/ /	<i>Cosmos</i> sp.	/ /	/ /
/ /	<i>Dahlia pinnaea</i>		/ /
	/ /	<i>Dianthus caryophyllus</i>	
/ /	/ /	<i>Gaillardia</i> sp.	
<i>Helianthus annuus</i>			/ /
<i>Hibiscus rosa - sinensis</i>			/ /
<i>Ocimum</i>		/ /	
<i>Solanum giganteum</i>		/ /	<i>basilicum</i>
<i>Tagetes</i> sp.	/ /	/ /	/ /
/ /	<i>Wedelia trilobata</i>		/ /
			<i>.Zinnia elegans</i>

Compositae

Solanaceae

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Aphis gossypii

//		<i>Acalypha wilkesiana</i>		//
	//		//	<i>Alcea rosea</i>
		//	//	<i>Aloe vera</i>
			//	<i>Asparagus sprengeri</i>
			//	<i>Calendula officinalis</i>
		//	//	<i>Callistemon citrinus</i>
<i>inermis</i>			//	<i>Catharanthus roseus</i>
	//		//	<i>Clerodendron</i>
//		//		<i>Chrysanthemum sp.</i>
<i>Cosmos sp.</i>			//	//
	//	<i>Cotyledon orbiculata</i>		//
//		//	//	<i>Dodonaea viscosa</i>
<i>F. lyrata</i>		//	//	<i>Ficus altissima</i>
<i>F. religiosa</i>		//	//	<i>F. nitida</i>
//	//	//	//	<i>Freesia sp.</i>
<i>Gaillardia sp.</i>				//
<i>Gazania</i>		//	//	//
//	<i>G. uniflora</i>	//	//	<i>rigens</i>
//	<i>Helianthus annuus</i>			//
//	//	//	//	//
	//	<i>Hibiscus rosa-sinensis</i>		
<i>Kalanchoe</i>		//	//	<i>Hyacinthus orientalis</i>

<i>Kochia scoparia</i>		/ /	<i>blossfeldiana</i>
	/ /	<i>Lawsonia inermis</i>	/ /
	/ /	<i>L. nana</i>	<i>Lantana camara</i>
<i>Myoporum</i>		/ /	<i>Lobularia maritima</i>
<i>Ocimum basilicum</i>		/ /	<i>pictum</i>
/ /	<i>Portulaca grandiflora</i>		/ /
/ /	<i>Rosa sp.</i>	/ /	/ /
/ /	/ /	<i>Schouwia thebaica</i>	
/ /	<i>Tagetes sp.</i>	/ /	/ /
	/ /	/ /	/ /
	/ /	<i>Tecoma stans</i>	
<i>Thespesia populnea</i>		/ /	<i>Tecomaria capensis</i>
<i>Tropaeolum majus</i>			/ /
<i>Verbena hortensis</i>			/ /
	/ /	<i>Yucca Sp.</i>	/ /
			<i>.Zinnia elegans</i>

A. gossypii

Compositae

Liliaceae Verbenaceae Moraceae

Malvaceae

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Aphis nasturtii

.Helianthus annuus / /

Aphis nerii

/ / / / *Asclepia sp.* / /
.Nerium oleander

Aphis punicae

.Punica grandiflora / / / /

Brachyunguis

tamaricis

Tamarix sp.

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//

Hysteroneura

setariae

//

//

Cynodon dactylon

Melanaphis sacchari

// // //

Sorghum vulgare

Rhopalosiphum maidis

// // // // //

// *Sorghum vulgare*

Zae mays

Macrosiphini

:

Brachycaudus

helichrysi

Helianthus annus

// //

*Brevicoryne**brassicae**.Brassica oleracea crispa*

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*Lipaphis erysimi**.Matthiola incana*

/ / / /

*Macrosiphum euphorbiae**Aptenia cordifolia*

/ /

Anemone coroanria

/ /

Calendula officinalis

/ /

/ / *Catharanthus roseus*

/ /

/ / / / *Chrysanthemum sp.*/ / / / *Dahlia pinnaea*/ / / / *Gaillardia sp.*/ / / / *Petunia hybrida*

<i>Senecio</i>	/ /	<i>Rosa</i> sp.
<i>Tecoma stans</i>	/ /	<i>hybridus</i>
/ /	<i>Tropaeolum majus</i>	/ /
/ /	<i>Verbena hortensis</i>	
	<i>Zinnia elegans</i>	

Compositae

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Macrosiphum rosae.*Rosa* sp. / /

Myzus persicae

//	<i>Bougainvillea</i> sp.	//	
	//	<i>Calendula officinalis</i>	
	//	//	<i>Catharanthus roseus</i>
	//	<i>Cestrum noturnum</i>	
		//	sp. <i>Chrysanthemum</i>
<i>Cosmos</i> sp.		//	<i>Clerodendron inerme</i>
//	<i>Dahlia pinnaea</i>	//	
	<i>Ficus altissima</i>	//	//
//	//	<i>F. nitida</i>	//
<i>Gaillardia</i> sp.		//	//
//	<i>Helianthus annuus</i>		//
//	//	<i>Hibiscus rosa-sinensis</i>	
//	<i>I. Palmata</i>	//	<i>Ipomoea pes-capre</i>
	<i>Petunia hybrida</i>	//	<i>I. tricolor</i>
<i>Tagetes</i> sp.		//	//
	<i>Tropaeolum majus</i>		//

Compositae

Convolvulaceae

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Solanaceae Moraceae

Uroleucon

compositae

.Centaurea moschate

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: Hymenoptera

Braconidae

Aphidiinae

Pachyneuron

Ceraphronidae

Dendrocercus sp.

Syrphophagus

Pteromalidae

sp.

aphidivorus

Encyrtidae

) Hyperparasitoids

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Compositae

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 Moraceae Liliaceae Cruciferae Leguminosae
 % , Verbenaceae
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M. A. fabae A. gossypii
 .() M. euphorbiae persicae

A. Cruciferae craccivora

.B. brassicae L. erysimi

Liliaceae

Moraceae

Verbenaceae

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Helianthus annus

Chrysanthemum sp.

Calendula officinalis

Gaillardia sp.

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Cosmos sp.
 Tagetes sp. //
officinalis //
 // *Calendula*
 .() // *Gaillardia* sp.
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 . *M. persicae* *A. fabae* *A. gossypii*

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(F=0.04, r=0.54)

(F=0.37, r=0.25)

F=0.27,)

(F= 0.57, r=0.16)

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.(F=0.04, r=0.55)

(F=0.09, r=0.45)

F=0.54,

(F=0.07, r=0.48)

.(r=0.17)

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(F=0.01, r=0.64)

F=0.20,)

(F=0.02, r=0.59)

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A. gossypii

.Cosmos sp.

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.*Kochia scoparia*

A. gossypii

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Discussion

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Rosa sp.

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M. rosae

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Martin (1972)

Aldryhim and Khalil (1996)

Halperin *et al.* (1988)

Premchand and Sarkar (1989)

Kanke

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(Blackman and Eastop,1994)

A.

Aloe vera

gossypii

M.

Aloephagus myersi

M.

.(Blackman and Eastop,1984) *persicae*

Tecoma Stans

euphorbiae

.(Blackman and Eastop ,1994)

Ziziphus sp.

Carissa sp.

Pinus sp.

.(Blackman and Eastop,1994)

A.

% ,

gossypii

M.

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persicae

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A. fabae

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M. euphorbiae

A. craccivora

(Blackman

% ,

.and Eastop,1984)

Calendula officinalis

Gaillardia sp.

Chrysanthemum sp.

Helianthus annus

Prosopis sp.

Blackman and Eastop (1994)

Rosa sp.

.(BlackmanandEastop,1984)

Asclepiadaceae

Compositae

Asclepiadaceae

Leguminosae

Liliaceae

A. craccivora

A.

gossypii

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(Aldryhim and Khalil,1996)

Bodenthimer and Seirski

Canakcioglu (1975)

Talhok (1969) (1957)

Al-Ali

Muller *et al.* (1977)

(1985)

Premchand and Sarkar(1989)

(1977)

Mustafa (1985,1986,1988a ,1988b

Harten *et al.* (1994)

,1989)

.Habib and El-kady (1961)

Halperin et al.(1988)

Cosmos

(/ / ,)

sp.

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Tagetes sp.

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Calendula officinalis

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Gaillardia sp.

Muller

(1968)

Bond and Lowe (1975)

Holt (1979)

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Dunn and Wright (1955)

Szalay (1958)

Komazaki (1982)

Aldryhim and Khalil (1993)

Aldryhim and Khalil (1993)

Blackman and Eastop (1984) .()

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(Heathcote1974; Power 1987 and Prestidge1982)

Petitt *et al.* (1994)

El-Fattah (1975)

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Fereres *et al.*(1988)

Sitobion avenae

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.Baugh and Phillips (1991)

Badenhausser *et al.*(1994)

Acyrtosiphon pisum

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Survey and Population Dynamics of Aphids on Ornamental Plants in Riyadh, and the Effect of Nitrogen Fertilization and Irrigation Rates on Its Population

This study was carried out with the following objectives: surveying aphid species on the ornamental plants in the Riyadh city, determining the host range for each aphid species, studying the population dynamics of aphids on four ornamental plants and investigating the effect of nitrogen fertilization and irrigation rates on the density of *Aphis gossypii* Glover. Aphids were collected from colonies from host plants between November 1991 to March, 1995. To determine the population dynamics of aphids on *Cosmos* sp, *Tagetes* sp, *Gaillardia* sp and *Calendula officinalis*, each plant species was grown in four plots (1x2 m). One plant from each plot was taken randomly at weekly intervals and aphid numbers were counted and recorded. To determine the effect of nitrogen fertilization rate on *A. gossypii*, *Cosmos* sp was planted in a plastic pots and each plant was infested by seven adults of *A. gossypii*. The nitrogen fertilizer, at three levels (0.0, 0.5 and 1 gm/plant) were added with the irrigation water at the appropriate time. To study the effect of irrigation rates on *A. gossypii*, *Kochia scoparia* plants were used. Each plant was infested by seven adults of *A. gossypii*. Three rates of irrigation were used (30, 60 and 90 cm³/plot/day).

In this study, 18 aphid species were recorded. The five most important were: *Aphis gossypii*, *Myzus persicae* Sulzer, *Aphis fabae* Scopoli, *Macrosiphum euphorbiae* Thomas and *Aphis craccivora* Koch.

A. gossypii recorded for the first time on *Aloe vera* and *M. euphorbiae* on *Tecoma stans*. The number of ornamental plants infested by aphids in Riyadh city were 74 plants species belong to 32 plant families. Compositae and Leguminosae were among the most important plant families recorded.

In this study, four parasitoids were recorded. Those parasitoids were: *Dendrocerus* sp., *Syrphophagus aphidivorus*, *Pachyneuron* sp. and a parasitoid belongs to subfamily Aphidiinae. All four parasitoids are hymenoptera and regarded as hyperparasitoids of aphids (secondary parasites).

The study of population dynamics of the aphids showed that each plant was infested with three aphid species; *A. gossypii*, *M. persicae*, and *A. fabae*. Also, the results showed that *Cosmos* sp. was highly infested by aphids comparing with other plants. Aphids were first appeared on *Cosmos* in the beginning of January, 1993. The peak density of aphids was recorded during mid-March, 1993 on the four ornamental plants. The aphids were disappeared completely from plants in the first week of April, 1993.

In the study of the effect of nitrogen fertilization, the aphid density of *A. gossypii* was significantly higher at rate 0.5 than at rate 0.0 gm/plant. However, no significant results found between 0.5 and 1.0 gm/plant. There were no significant effect resulting from aphid feeding on the plant height at all fertilization rates. The mean number of flowers increased significantly in non-infested plants compared with infested one.

Concerning the irrigation rates, it was found that the density of *A. gossypii* was significantly higher at 60 cm³/pot/day when compared with other irrigation rates used in this study. The plant height decreased insignificantly in infested plants.

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Eulachnus rileyi W.

(Homoptera: Aphididae)

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Macrosiphum)

(Homoptera: Aphididae) *rosae* (L.

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