

Egyptian Checklist of Mites from Aromatic, Medicinal and Ornamental Plants

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ABSTRACT

A survey of mites associated with 25 aromatic and medicinal plant species of 13 families i.e., Araliaceae, Caricaceae, Chenopodiaceae, Compositae, Euphorbiaceae, Lamiaceae, Lauraceae, Liliaceae, Meliaceae, Myrtaceae, Papaveraceae, Rutaceae and Umbelliferae; addition to 75 ornamental plant species belonging to nine groups (cut-flower rose, flowering bulbs, flowering potted plants, ornamental trees, shrubs, vines, fences, ornamental palm trees and cut flowers) were carried out for one year. Thirty-eight families including 92 genera and 168 mite species were collected from these plant species at Giza and Fayoum Governorates. One new species of the family Phytoseiidae from genus *Euseius* was recorded. Twenty-four species belonging to different families; Acaridae (seven species), Parasitidae (six species), five species to each family Cunaxidae and Cheyletidae, and one species to the family Tarsonemidae were firstly recorded.

Key Words: Survey, Mite pests, Predacious mites, Ornamental plants, Aromatic plants, Medicinal plants, Giza, Fayoum.

INTRODUCTION

Production of ornamental flowers combines economic returns with satisfaction to the grower, and has recently experienced expressive growth. Some mite species feed on leaves, stems, flowers and even on the fruits. Others are found only underground where they feed on roots, tubers, or rhizomes. If the infestation is severe, leaves may fall and the number of flowers produced may be reduced considerably (Gallo *et al.*, 2002). In addition to yield reduction, there may be a reduction in quality of the flowers (Karlik *et al.*, 1995).

Some mites are predators feed on harmful insects and mites while others are fungivorous, saprophagous or of debatable feeding habit.

Aromatic and medicinal plants, herbs and spices are important source, for the synthesis of more complicated flavors, fragrances, pharmaceuticals, vitamins and other important chemicals. The survey of these plants and mite species associated with has been extensively studied in different countries as presented by Hanna *et al.*, 1981; Mohamed & Hassan, 1984; Palmer & Pullen, 1995; Friend *et al.*, 1999; Fan *et al.*, 2000; Moraes *et al.*, 2004; Cui *et al.*, 2005; Jesse *et al.*, 2006; Sallam *et al.*, 2007; Amro, 2007; Rosenheim & Fournier, 2007 and Lawson-Balagbo *et al.*, 2008. Hence, the present study was pursued to survey acarine species inhabiting some ornamental, aromatic and medicinal plants at Fayoum and Giza Governorates in Egypt.

MATERIALS AND METHODS

Acari surveys of different ornamental, aromatic as well as medicinal plants are performed at Giza and Fayoum Governorates. Random samples of leaves, debris, litters and soil were collected periodically at fortnight intervals from February 2006 through January 2007. Ten leaves were taken from different levels of the plants throughout the growing season. However soil, debris and litter samples under plants were taken, then mites were extracted by modified Tullgren funnel. Phytophagous, predacious and other mites of miscellaneous feeding habits were identified.

RESULTS AND DISCUSSION

The number of plants sampled in each region varied according to their availability. A total of 25 aromatic and medicinal plant species in 13 families were sampled i.e., *Hedera helix* (Araliaceae); *Carica papaya* (Caricaceae); *Chenopodium ambrosioides* (Chenopodiaceae); *Ambrosia maritima*, *Calendula officinalis* and *Matricaria chamomilla* (Compositae); *Ricinus communis* (Euphorbiaceae); *Mentha piperita*, *M. viridis*, *Ocimum basilicum*, *Origanum marjorana*, *Rosmarinus officinale* and *Salvia officinalis* (Lamiaceae); *Laurus nobilis* (Lauraceae); *Ruscus aculeatus* (Liliaceae); *Azadirachta indica* (Meliaceae); *Eucalyptus globules* (Myrtaceae); *Papaver somniferum* (Papaveraceae); *Citrus aurantium* (Rutaceae) and *Ammi majus*, *Anethum graveolins*, *Apium graveolens*, *Coriandrum sativum*,

Foeniculum vulgare and *Petroselinum sativum* (Umbelliferae).

Also 75 ornamental plant species of nine groups were sampled for mite species:

1. **Cut-flower rose:** *Rosa hybrida* (Rosaceae).
2. **Flowering bulbs:** *Crinum asiaticum* (Amaryllidaceae), *Polianthes tuberosa* (Liliaceae) and *Strelitzia reginae* (Streliziaceae).
3. **Flowering potted plants:** *Begonia* sp. (Begoniaceae) and *Pelargonium zonale* (Geraniaceae).
4. **Ornamental trees:** *Dracaena fragrans* (Agavaceae); *Monstera deliciosa* (Araceae); *Schefflera actinophylla* (Araliaceae); *Araucaria excelsa* (Araucariaceae); *Amphilobium paniculata* and *Spathodea nilotica* (Bignoniaceae); *Cassia nodosa* (Caesalpinaceae); *Casuarina equisetifolia* (Casuarinaceae); *Cupressus sempervirens* (Cupressaceae); *Acacia saligna*, *Bauhinia hookeru*, *Delonix regia*, *Dickrostachys nutans* and *Erythrina variegata* (Leguminosae); *Ficus benghalensis*, *F. nitida*, *F. sycamores*, *Morus alba* and *M. nigra* (Moraceae); *Callistemon citrinus* (Myrtaceae); *Pinus halepensis* (Pinaceae); *Phyllostachys pubescens* (Poaceae); *Salix babylonica* (Salicaceae); *Koelreuteria paniculata* (Sapindaceae); *Poulownia tomentosa* (Scrophulariaceae) and *Taxodium distichum* (Taxodiaceae).
5. **Shrubs:** *Yucca gloriosa* (Agavaceae); *Nerium oleander* and *Plumeria alba* (Apocynaceae); *Acalypha marginta*, *A. wilkesiana* and *Euphorbia pulcherrima* (Euphorbiaceae); *Legerstroemia indica* (Lythraceae); *Hibiscus sabderiffa* (Malvaceae) and *Jasminum sambac* (Oleaceae).
6. **Vines:** *Syngonium podophyllum* (Araceae), *Tecoma stans* (Bignoniaceae), *Quisqualis indica* (Combretaceae), *Ipomoea palmate* (Convolvulaceae), *Bougainvillea spectabilis* (Nyctaginaceae), *Jasminum grandiflorum* (Oleaceae) and *Clerodendrum splendens* (Verbenaceae).
7. **Fences:** *Adhatoda vasica* (Acanthaceae), *Codiaeum variegatum* (Euphorbiaceae), *Murraya exotica* (Mutaceae), *Melaleuca genistifolia* (Myrtaceae), *Pittosporum tobira* (Pittosporaceae), *Dodonaea thunbergiana* (Sapindaceae) and *Lantana camara* (Verbenaceae).
8. **Ornamental palm trees:** *Cycas revolute* (Cycadaceae); *Caryota mitis*, *Phoenix canariensis*, *P. dactylifera*, *Roystonia ragia* and *Washingtonia filifera* (Palmaceae).
9. **Cut flowers:** *Celosia pyramidalis* (Amarantaceae); *Vinca rosea* (Apocynaceae); *Gerbera jamesonii* and *Helianthus annuus* (Compositae); *Alyssum maritimum* and *Matthiola incana* (Cruciferae); *Salvia leucantha* (Lamiaceae); *Agapanthus umbellatus* and *Cordyline fruticosa* (Liliaceae); *Althaea rosae* (Malvaceae); *Antirrhinum majus* (Scrophulariaceae); *Petunia hybrid* (Solanaceae); *T. majus majus* (Tropaeolaceae) and *Viola tricolor* (Violaceae).

The list presented below comprises a total of 168 mite species from four orders; representing 92 genera of 38 families were collected from different plants. Nineteen of these species belong to two phytophagous families Tenuipalpidae and Tetranychidae and 93 predatory species belonging to the families Ascidae, Bdellidae, Caligonellidae, Camerobiidae, Cheyletidae, Cunaxidae, Digamasellidae, Eupalopsellidae, Eupodidae, Laelapidae, Macrochelidae, Ologamasidae, Pachylaelapidae, Parasitidae, Phytoseiidae, Raphignathidae, Rhagidiidae, Stigmaeidae and Uropodidae. The remaining species belonging to families of diverse or inadequately known feeding habits, which are here categorized as "generalists" (Acaridae, Ameroseiidae, Aphelacaridae, Cosmochthoniidae, Ctenacaridae, Epilohmanniidae, Galumnidae, Glycyphagidae, Haplochthoniidae, Haplozetidae, Lohmanniidae, Oppiidae, Oribatulidae, Pygmephoridae, Siteroptidae, Tarsonemidae and Tydeidae). Generalists are thought to comprise detritivorous, aligivorous, fungivorous, bacteriophagous and pollenophagous organisms (Walter and O'Dowd, 1995).

List of mites recorded

ORDER ACARIDIDA

Family Acaridae Ewing & Nesbitt

1. *Acarus siro* L.
Host plant: *F. nitida*, *R. ragia*.
2. *Rhizoglyphus callae* Oudemans
Host plant: *T. majus*, *D. nutans*.
3. *R. robini* Claparède
Host plant: *A. saligna*.
4. *Tyrophagus brevicrinatus* Robertson

Host plant: *M. viridis*, *C. pyramidalis*,
B. spectabilis, *Begonia* sp., *P. alba*, *Q. indica*,
S. reginae, *A. vasica*, *C. variegatum*.

5. *T. longior* (Gervais)

Host plant: *O. basilicum*, *C. asiaticum*.

6. *T. perniciosus* Zachvatkin

Host plant: *C. sempervirens*, *F. nitida*, *H. sabderiffa*, *P. tuberosa*, *C. splendens*.

7. *T. putrescentiae* (Schrank)

Host plant: *A. graveolens*, *P. sativum*, *C. fruticosa*, *A. umbellatus*, *G. jamesonii*, *M. Periwinkle*, *C. pyramidalis*, *C. equisetifolia*, *A. excelsa*, *D. fragrans*, *P. pubescens*, *C. sempervirens*, *F. nitida*, *F. benghalensis*, *J. sambac*, *R. hybrida*, *S. podophyllum*, *Begonia* sp., *A. wilkesiana*, *P. canariensis*, *P. dactylifera*, *C. mitis*, *R. ragia*, *A. vasica*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.

8. *T. similis* Volgin

Host plant: *A. maritima*, *L. nobilis*, *P. somniferum*, *M. incana*, *H. annus*, *V. tricolor*, *A. majus*, *C. pyramidalis*, *K. panniculata*, *A. paniculata*, *A. saligna*, *B. hookeru*, *F. nitida*, *Y. gloriosa*, *L. indica*, *Q. indica*, *W. filifera*, *A. vasica*, *C. splendens*, *D. thunbergiana*.

9. *T. tropicus* Robertson

Host plant: *S. leucantha*, *F. nitida*, *F. benghalensis*, *E. pulcherrima*, *R. ragia*, *D. thunbergiana*.

Family Glycyphagidae Berlese

1. *Austroglycyphagus geniculatus* (Vitzthum)

Host plant: *L. camara*.

2. *Glycyphagus domesticus* (De Geer)

Host plant: *C. pyramidalis*, *C. sempervirens*, *L. indica*, *I. palmata*, *Begonia* sp., *W. filifera*, *C. variegatum*, *D. thunbergiana*.

ORDER ACTINEDIDA

Family Bdellidae Dugès

1. *Cyta latirostris* (Hermann)

Host plant: *A. majus*, *R. communis*, *S. officinalis*, *E. globulus*, *F. vulgare*, *A. indica*, *P. somniferum*, *A. graveolins*, *M. viridis*, *O. marjorana*, *P. sativum*, *H. annus*, *V. tricolor*, *A. majus*, *C. fruticosa*, *A. umbellatus*, *G. jamesonii*, *M. Periwinkle*, *M. genistifolia*, *P. tobira*, *F. sycamorus*, *E. variegata*, *M. deliciosa*, *D. nutans*, *D. regia*, *C. sempervirens*, *A. saligna*, *B. hookeru*, *F. benghalensis*, *Y. gloriosa*, *N. oleander*, *C. asiaticum*, *H. sabderiffa*, *R. hybrida*, *L. indica*, *T. stans*, *B. spectabilis*, *S. podophyllum*, *J. grandiflorum*, *Begonia* sp.,

A. wilkesiana, *P. alba*, *P. tuberosa*, *Q. indica*, *M. exotica*, *P. dactylifera*, *R. ragia*, *A. vasica*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.

2. *Neomolgus aegyptiacus* Soliman

Host plant: *M. viridis*, *O. basilicum*, *S. leucantha*, *C. pyramidalis*, *S. nilotica*, *P. zonale*, *C. mitis*, *R. ragia*.

3. *Spinibdella bifurcata* Atyeo

Host plant: *C. papaya*, *M. chamomilla*, *C. ambrosioide*, *L. nobilis*, *C. sativum*, *C. officinalis*, *M. viridis*, *P. pubescens*, *F. nitida*, *P. alba*, *W. filifera*, *R. ragia*, *C. variegatum*.

Family Caligonellidae Grandjean

1. *Caligonella humilis* Grandjean

Host plant: *C. pyramidalis*.

2. *Molothrognathus minutus* Soliman

Host plant: *P. canariensis*.

Family Camerobiidae Southcott

Camerobia gonzali (Zaher & Gomaa)

Host plant: *D. regia*, *H. sabderiffa*, *I. palmata*, *B. spectabilis*.

Family Cheyletidae Leach

1. *Acaropsella kulagini* (Rohdendorf)

Host plant: *F. sycamorus*, *M. alba*, *M. nigra*, *D. nutans*, *D. thunbergiana*.

2. *A. notchi* Gomaa & Hassan

Host plant: *F. benghalensis*, *A. vasica*, *D. thunbergiana*.

3. *Acaropsellina (Acaropsis) sollers* (Rohdendorf)

Host plant: *C. aurantium*.

4. *Cheletogenes ornatus* (Canestrini & Fanzago)

Host plant: *E. variegata*.

5. *Cheletomorpha lepidopterorum* (Shaw)

Host plant: *A. graveolins*, *P. pubescens*, *D. thunbergiana*.

6. *Chelotominus (Hemicheyletia) bakeri* (Ehara)

Host plant: *R. communis*, *L. nobilis*, *C. sativum*, *A. graveolens*, *O. basilicum*, *O. marjorana*, *A. umbellatus*, *S. leucantha*, *M. Periwinkle*, *C. nodosa*, *S. nilotica*, *C. sempervirens*, *B. hookeru*, *F. nitida*, *R. hybrida*, *E. pulcherrima*, *L. indica*, *T. stans*, *S. podophyllum*, *J. grandiflorum*, *Begonia* sp., *A. wilkesiana*, *P. alba*, *P. tuberosa*, *M. exotica*, *P. canariensis*, *P. dactylifera*, *C. mitis*, *R. ragia*, *S. reginae*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.

7. *C. congensis* (Cunliffe)

Host plant: *C. variegatum*.

8. *C. volgini* (Cunliffe)

Host plant: *S. leucantha*, *F. nitida*.

9. *C. wellsi* (Baker)

Host plant: *F. nitida*.

10. *Cheyletus aversor* Rohdendorf

Host plant: *W. filifera*.

11. *Ch. cacahuamilpensis* Baker

Host plant: *E. globulus*, *S. nilotica*, *A. vasica*.

12. *Mexecheles cunliffei* De Leon

Host plant: *L. nobilis*.

Family Cunaxidae Thor

1. *Armscirus anastosi* Lindquist

Host plant: *A. wilkesiana*.

2. *Coleoscirus buartus* Den Heyer

Host plant: *C. mitis*.

3. *Cunaxa capreolus* (Berlese)

Host plant: *H. helix*, *C. sativum*, *A. graveolens*, *I. palmata*, *P. alba*, *C. splendens*, *D. thunbergiana*.

4. *Neocunaxoides andrei* (Baker & Hoffmann)

Host plant: *C. officinalis*, *M. viridis*, *O. basilicum*, *O. marjorana*, *M. Periwinkle*, *C. pyramidalis*, *M. deliciosa*, *S. actinophylla*, *D. fragrans*, *D. nutans*, *S. babylonica*, *A. saligna*, *B. hookeru*, *F. nitida*, *Y. gloriosa*, *P. zonale*, *R. hybrida*, *S. podophyllum*, *Begonia* sp., *A. marginta*, *P. alba*, *Q. indica*, *M. exotica*, *C. revoluta*, *P. dactylifera*, *W. filifera*, *C. mitis*, *R. ragia*, *S. reginae*, *A. vasica*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.

5. *N. rykei* Den Heyer

Host plant: *M. viridis*, *O. marjorana*, *C. fruticosa*, *S. leucantha*, *R. hybrida*, *S. podophyllum*, *A. marginta*, *A. wilkesiana*, *P. tuberosa*, *W. filifera*, *C. mitis*, *A. vasica*, *C. variegatum*, *C. splendens*.

6. *Pulaeus americanus* (Baker & Hoffmann)

Host plant: *P. pubescens*, *C. mitis*.

7. *P. glebulentus* Den Heyer

Host plant: *F. benghalensis*, *C. mitis*, *A. vasica*, *D. thunbergiana*.

8. *P. subterraneus* (Berlese)

Host plant: *P. pubescens*, *A. wilkesiana*.

Family Eupalopsellidae Willmann

1. *Eupalopsellus olearius* Zaher & Gomaa

Host plant: *C. variegatum*.

2. *Saniosulus nudus* Summers

Host plant: *L. nobilis*, *C. pyramidalis*, *P. alba*, *R. ragia*.

Family Eupodidae Koch

1. *Egypteupodes strandmanni* Abou-Awad

Host plant: *D. regia*, *J. grandiflorum*, *A. wilkesiana*, *P. tuberosa*, *M. exotica*, *D. thunbergiana*.

2. *Eupodes momenii* Abou-Awad

Host plant: *M. Periwinkle*, *M. nigra*, *S. nilotica*, *T. stans*, *S. podophyllum*, *P. tuberosa*, *C. variegatum*.

3. *E. niloticus* Abou Awad & El-Bagoury

Host plant: *L. nobilis*, *P. sativum*, *D. regia*.

4. *E. temperatus* Shiba

Host plant: *M. chamomilla*, *S. officinalis*, *F. vulgare*, *P. somniferum*, *C. sativum*, *A. graveolens*, *A. graveolins*, *C. officinalis*, *M. viridis*, *O. basilicum*, *O. marjorana*, *P. hybrida*, *M. incana*, *C. fruticosa*, *A. umbellatus*, *G. jamesonii*, *S. leucantha*, *M. Periwinkle*, *C. pyramidalis*, *P. tobira*, *P. halepensis*, *A. saligna*, *C. asiaticum*, *J. sambac*, *R. hybrida*, *J. grandiflorum*, *Begonia* sp., *A. marginta*, *P. alba*, *C. revoluta*, *W. filifera*, *C. mitis*, *S. reginae*, *A. vasica*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.

5. *E. voxencollinus* Sig Thor

Host plant: *A. umbellatus*, *P. tobira*, *E. pulcherrima*, *T. stans*, *W. filifera*.

Family Pygmephoridae Cross

Pediculaster gallinae Zaher & Kandeel

Host plant: *W. filifera*, *S. reginae*.

Family Raphignathidae Kramer

1. *Raphignathus bakeri* Zaher & Gomaa

Host plant: *M. Periwinkle*, *A. wilkesiana*.

2. *R. collegiatus* Atyeo, Baker & Crossley

Host plant: *L. indica*.

3. *R. ehari* Zaher & Gomaa

Host plant: *M. Periwinkle*, *F. nitida*, *P. alba*.

4. *R. evansi* Zaher & Gomaa

Host plant: *A. vasica*.

5. *R. gracilis* (Rack)

Host plant: *F. nitida*.

6. *R. niloticus* Rakha & Mohamed

Host plant: *H. helix*, *M. viridis*, *M. nigra*, *D. nutans*, *D. regia*, *S. babylonica*, *R. hybrida*, *L. indica*, *I. palmata*, *B. spectabilis*, *L. camara*, *J. grandiflorum*, *Begonia* sp., *A. wilkesiana*, *P. dactylifera*, *S. reginae*, *A. vasica*, *C. variegatum*, *D. thunbergiana*.

Family Rhagidiidae Oudemans

1. *Robustocheles mucronata* (Willmann)

Host plant: *C. asiaticum*.

2. *Shibaia shereefi* Abou-Awad

Host plant: *G. jamesonii*, *T. stans*, *C. mitis*, *C. splendens*.

Family Siteroptidae Mahunka

Siteroptes manurei Soliman & Kandeel

Host plant: *P. pubescens*.

Family Stigmaeidae Oudemans

1. *Agistemus exsertus* Gonzalez

Host plant: *O. marjorana*, *C. pyramidalis*, *D. nutans*, *F. nitida*, *H. sabderiffa*, *R. hybrida*,

- I. palmata*, *J. grandiflorum*, *A. marginta*, *P. alba*, *P. tuberosa*, *Q. indica*, *S. reginae*, *A. vasica*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.
- A. vulgaris* Soliman & Gomaa
Host plant: *O. marjorana*.
 - Stigmaeus africanus* Soliman & Gomaa
Host plant: *A. wilkesiana*, *M. exotica*, *R. ragia*, *D. thunbergiana*.

Family Tarsonemidae Canestrini & Fanzago

- Steneotarsonemus hatzinikolisi* Emmanouel
Host plant: *S. officinalis*, *A. graveolens*, *B. hookeru*, *R. hybrida*, *D. thunbergiana*.
- Tarsonemus meyerus* Soliman & Kandeel
Host plant: *L. nobilis*, *C. sativum*, *C. officinalis*, *O. basilicum*, *M. genistifolia*, *K. panniculata*, *S. nilotica*, *C. asiaticum*, *Begonia* sp., *P. tuberosa*, *M. exotica*, *C. revoluta*, *P. canariensis*, *R. ragia*, *S. reginae*, *A. vasica*, *C. variegatum*, *C. splendens*.

Family Tenuipalpidae Berlese

- Aegyptobia salixi* Zaher & Yousef
Host plant: *M. viridis*.
- A. sayedi* Yousef
Host plant: *M. viridis*, *R. hybrida*.
- Brevipalpus obovatus* Donnadieu
Host plant: *H. helix*, *M. piperita*, *C. officinalis*, *M. viridis*, *O. basilicum*, *O. marjorana*, *G. jamesonii*, *S. babylonica*, *H. sabderiffa*, *E. pulcherrima*, *I. palmata*, *Begonia* sp., *P. alba*, *R. ragia*, *S. reginae*, *C. splendens*.
- B. olearius* Sayed
Host plant: *P. alba*.
- Cenopalpus pulcher* (Canestrini & Fanzago)
Host plant: *A. rosae*, *Begonia* sp.

Family Tetranychidae Donnadieu

- Bryobia cristata* (Duges)
Host plant: *C. aurantium*, *A. majus*, *R. officinale*, *M. chamomilla*, *S. officinalis*, *P. somniferum*, *A. graveolins*, *C. officinalis*, *P. sativum*, *M. incana*, *A. saligna*, *W. filifera*, *D. thunbergiana*.
- B. praetiosa* Koch
Host plant: *G. jamesonii*, *T. distichum*.
- Eotetranychus zacheri* Zaher, Gomaa & El-Enany
Host plant: *M. piperita*, *F. nitida*, *N. oleander*, *A. vasica*, *D. thunbergiana*.
- Eutetranychus africanus* (Tücker)
Host plant: *P. alba*.
- E. pyri* Attiah
Host plant: *P. alba*.
- Oligonychus afrasiasticus* (McGregor)
Host plant: *F. nitida*.

- O. mangiferus* (Rahman & Sapra)
Host plant: *P. alba*.
- O. punicae* (Hirst)
Host plant: *O. marjorana*, *R. hybrida*, *P. alba*.
- O. sayedi* Zaher, Gomaa & El-Enany
Host plant: *F. nitida*, *R. hybrida*.
- Panonychus ulmi* (Koch)
Host plant: *M. viridis*, *S. reginae*, *D. thunbergiana*.
- Tetranychina harti* (Ewing)
Host plant: *C. papaya*, *C. officinalis*, *M. viridis*, *A. maritimum*, *S. leucantha*, *P. tomentosa*, *C. citrinus*, *C. nodosa*, *F. nitida*, *R. hybrida*, *Begonia* sp., *A. wilkesiana*, *W. filifera*, *R. ragia*, *S. reginae*.
- Tetranychus cucurbitacearum* (Sayed)
Host plant: *C. papaya*, *A. majus*, *R. communis*, *A. maritima*, *F. vulgare*, *P. somniferum*, *C. sativum*, *A. graveolens*, *A. graveolins*, *C. officinalis*, *M. viridis*, *O. marjorana*, *P. sativum*, *H. annus*, *V. tricolor*, *A. umbellatus*, *M. Periwinkle*, *C. pyramidalis*, *T. distichum*, *A. excelsa*, *P. pubescens*, *A. saligna*, *N. oleander*, *J. sambac*, *R. hybrida*, *P. alba*, *P. tuberosa*, *M. exotica*, *P. canariensis*, *W. filifera*, *C. mitis*, *A. vasica*, *C. variegatum*, *C. splendens*.
- T. neocalidonicus* André
Host plant: *E. globulus*, *C. officinalis*, *M. Periwinkle*, *R. hybrida*.
- T. urticae* Koch
Host plant: *C. papaya*, *C. ambrosioide*, *L. nobilis*, *M. viridis*, *O. basilicum*, *O. marjorana*, *P. sativum*, *T. majus*, *A. rosae*, *A. majus*, *G. jamesonii*, *M. alba*, *B. hookeru*, *J. sambac*, *R. hybrida*, *L. camara*, *J. grandiflorum*, *Begonia* sp., *A. wilkesiana*, *P. alba*, *P. tuberosa*, *C. splendens*, *D. thunbergiana*.

Family Tydeidae Kramer

- Paralorryia aegyptiaca* Rasmy & El-Bagoury
Host plant: *M. exotica*, *D. thunbergiana*.
- P. bakeri* Zaher & El-Bagoury
Host plant: *P. sativum*, *A. saligna*, *W. filifera*.
- P. ferula* (Baker)
Host plant: *M. exotica*.
- P. gizai* El-Bagoury
Host plant: *M. viridis*, *O. basilicum*, *O. marjorana*, *P. hybrida*, *V. tricolor*, *M. genistifolia*, *P. pubescens*, *F. nitida*, *F. benghalensis*, *B. spectabilis*, *Begonia* sp., *A. marginta*, *A. wilkesiana*, *P. alba*, *C. revoluta*, *P. dactylifera*, *C. mitis*, *S. reginae*, *C. variegatum*, *C. splendens*.
- P. mali* (Oudemans)

- Host plant: *A. excelsa*, *C. sempervirens*,
A. vasica, *D. thunbergiana*.
6. *P. woolleyi* Baker
Host plant: *A. indica*, *G. jamesonii*, *C. splendens*.
 7. *P. zaheeri* Baker
Host plant: *D. thunbergiana*.
 8. *Paratriophydeus plummeri* (Baker)
Host plant: *L. nobilis*, *S. leucantha*, *H. sabderiffa*,
R. ragia, *C. splendens*.
 9. *Pronematus rykeri* Meyer & Rodriguez
Host plant: *C. officinalis*.
 10. *P. ubiquitous* (McGregor)
Host plant: *B. hookeru*.
 11. *Triophydeus vitis* El-Bagoury
Host plant: *R. hybrida*, *I. palmata*.
 12. *Tydeus californicus* (Banks)
Host plant: *P. sativum*, *E. variegata*,
H. sabderiffa, *L. indica*, *P. alba*, *A. vasica*.
 13. *T. costensis* Baker
Host plant: *P. somniferum*, *A. graveolens*,
O. marjorana, *M. Periwinkle*, *S. babylonica*,
R. hybrida, *A. vasica*, *C. splendens*.
 14. *T. kochi* Oudemans
Host plant: *C. mitis*.
 15. *T. mississippiensis* Baker
Host plant: *S. officinalis*, *Q. indica*.
 16. *T. oregonensis* Baker
Host plant: *C. asiaticum*, *I. palmata*, *A. vasica*,
C. splendens.
 17. *T. schusteri* André & Naudo
Host plant: *Begonia* sp.

ORDER GAMASIDA

Family Ameroseiidae Evans

1. *Kleemannia kosii* El-Badry, Nasr & Hafez
Host plant: *A. wilkesiana*, *D. thunbergiana*.
2. *K. plumosus* (Oudemans)
Host plant: *L. nobilis*, *A. indica*, *A. graveolens*,
A. graveolins, *M. viridis*, *P. sativum*,
P. pubescens, *C. sempervirens*, *B. hookeru*,
F. nitida, *R. hybrida*, *T. stans*, *L. camara*,
M. exotica, *S. reginae*, *A. vasica*,
D. thunbergiana.
3. *K. zaheeri* El-Badry, Nasr & Hafez
Host plant: *A. vasica*.

Family Ascidae Voigts & Oudemans

1. *Blattisocius tarsalis* (Berlese)
Host plant: *C. variegatum*.
2. *Gamasellodes bicolor* (Berlese)
Host plant: *P. sativum*.
3. *Lasioseius bispinosus* Evans
Host plant: *L. nobilis*.
4. *L. lindquisti* Nasr & Abou-Awad
Host plant: *T. stans*, *C. mitis*, *R. ragia*,

- C. variegatum*, *C. splendens*.
5. *L. peritremus* Nasr & Abou-Awad
Host plant: *O. marjorana*.
 6. *L. sewai* Nasr & Abou-Awad
Host plant: *M. viridis*, *C. pyramidalis*,
R. hybrida, *E. pulcherrima*, *C. mitis*,
C. variegatum.
 7. *Proctolaelaps aegyptiaca* Nasr
Host plant: *F. vulgare*, *C. sativum*, *S. babylonica*,
Begonia sp., *S. reginae*, *C. splendens*.
 8. *P. orientalis* Nasr
Host plant: *A. graveolens*, *A. graveolins*,
C. officinalis, *M. viridis*, *O. marjorana*,
C. pyramidalis, *A. excelsa*, *F. nitida*,
F. benghalensis, *E. pulcherrima*, *S. podophyllum*,
J. grandiflorum, *Begonia* sp., *Q. indica*,
C. revoluta.
 9. *P. pygmaeus* (Müller)
Host plant: *M. viridis*, *O. basilicum*,
O. marjorana, *R. hybrida*, *A. marginta*,
M. exotica, *W. filifera*, *S. reginae*, *A. vasica*,
C. splendens.
 10. *P. striatus* Afifi, Hassan & El-Bishlawy
Host plant: *A. graveolins*.

Family Digamasellidae Evans

1. *Dendrolaelaps aegypticus* Metwally & Mersal
Host plant: *C. pyramidalis*.
2. *D. zaheeri* Metwally & Mersal
Host plant: *D. fragrans*.

Family Laelapidae Berlese

1. *Androlaelaps aegypticus* Hafez, El-Badry & Nasr
Host plant: *Begonia* sp., *C. splendens*,
D. thunbergiana.
2. *A. casalis* (Berlese)
Host plant: *P. somniferum*, *M. Periwinkle*,
D. regia, *A. saligna*, *F. nitida*, *R. hybrida*,
S. podophyllum, *J. grandiflorum*, *C. revoluta*,
C. splendens, *D. thunbergiana*.
3. *A. reticulatus* Hafez, El-Badry & Nasr
Host plant: *P. sativum*, *G. jamesonii*,
J. grandiflorum, *S. reginae*, *C. splendens*,
D. thunbergiana.
4. *A. zaheeri* Hafez, El-Badry & Nasr
Host plant: *M. exotica*.
5. *Cosmolaelaps keni* Hafez, El-Badry & Nasr
Host plant: *M. viridis*, *M. Periwinkle*,
S. actinophylla, *A. wilkesiana*.
6. *C. longus* Hafez, El-Badry & Nasr
Host plant: *P. tuberosa*.
7. *Hypoaspis gergus* Hafez, El-Badry & Nasr
Host plant: *O. basilicum*, *C. variegatum*.
8. *H. orientalis* Hafez, El-Badry & Nasr
Host plant: *S. reginae*.
9. *Laelaspis astronomicus* (Koch)

Host plant: *M. Periwinkle*, *C. pyramidalis*, *Begonia* sp., *A. wilkesiana*, *P. alba*, *P. tuberosa*, *C. variegatum*, *C. splendens*, *D. thunbergiana*.

10. *Ololaelaps bregetovae* Shereef & Soliman

Host plant: *A. graveolens*, *C. officinalis*, *M. viridis*, *C. sempervirens*, *P. alba*, *C. mitis*, *R. ragia*.

11. *Stratiolaelaps miles* (Berlese)

Host plant: *L. camara*.

Family Macrochelidae Vitzthum

1. *Macrocheles punctata* Hafez, El-Badry & Nasr

Host plant: *A. majus*, *M. viridis*, *S. leucantha*, *P. zonale*.

2. *M. sembelawanii* Hafez, El-Badry & Nasr

Host plant: *R. hybrida*.

Family Ologamasidae Ryke

Gamasiphis pulchellus (Berlese)

Host plant: *M. viridis*, *O. marjorana*, *M. incana*, *S. leucantha*, *M. Periwinkle*, *A. paniculata*, *S. babylonica*, *A. saligna*, *B. hookeru*, *F. nitida*, *Y. gloriosa*, *R. hybrida*, *E. pulcherrima*, *S. podophyllum*, *Begonia* sp., *A. wilkesiana*, *P. tuberosa*, *M. exotica*, *C. revoluta*, *R. ragia*, *S. reginae*, *A. vasica*, *C. splendens*, *D. thunbergiana*.

Family Pachylaelapidae Berlese

Pachylaelaps reticulatus Hafez & Nasr

Host plant: *O. marjorana*, *V. tricolor*, *R. hybrida*, *Begonia* sp.

Family Parasitidae Oudemans

1. *Eugamasus cavernicola* Trägårdh

Host plant: *R. ragia*.

2. *Gamasodes spiniger* (Trägårdh)

Host plant: *F. benghalensis*, *Begonia* sp., *R. ragia*, *C. splendens*, *D. thunbergiana*.

3. *Parasitellus fucorum* (De Geer)

Host plant: *R. ragia*.

4. *Parasitus beta* Oudemans & Voigts

Host plant: *M. viridis*, *S. leucantha*, *B. spectabilis*, *W. filifera*, *R. ragia*, *C. variegatum*, *C. splendens*.

5. *P. consanguineus* Oudemans & Voigts

Host plant: *A. marginta*, *S. reginae*.

6. *P. fimetorum* (Berlese)

Host plant: *O. basilicum*, *S. babylonica*, *R. hybrida*, *J. grandiflorum*, *R. ragia*, *C. variegatum*.

7. *P. hyalinus* (Willmann)

Host plant: *P. alba*, *R. ragia*.

8. *Porrhostaspis lunulata* Müller

Host plant: *R. ragia*.

9. *Vulgarogamasus remberti* (Oudemans)

Host plant: *A. majus*, *R. hybrida*.

Family Phytoseiidae Berlese

1. *Euseius plumerii* Abo-Shnaf & Romeih sp. n.

Host plant: *L. nobilis*, *O. marjorana*, *A. rosae*, *S. leucantha*, *C. pyramidalis*, *A. paniculata*, *B. hookeru*, *F. nitida*, *H. sabderiffa*, *R. hybrida*, *I. palmata*, *L. camara*, *Begonia* sp., *A. marginta*, *A. wilkesiana*, *P. alba*, *Q. indica*, *A. vasica*, *C. variegatum*, *C. splendens*.

2. *Neoseiulella* (*Typhlodromus*) *schusteri* (Yousef & El-Brollosy)

Host plant: *M. viridis*.

3. *Neoseiulus barkeri* (Hughes) Synonym *Amblyseius cydnodactylon* Shehata & Zaher

Host plant: *M. piperita*, *A. maritima*, *A. graveolins*, *C. officinalis*, *M. viridis*, *O. basilicum*, *O. marjorana*, *P. sativum*, *V. tricolor*, *S. leucantha*, *M. Periwinkle*, *C. pyramidalis*, *A. paniculata*, *S. nilotica*, *F. nitida*, *R. hybrida*, *E. pulcherrima*, *Begonia* sp., *A. marginta*, *P. alba*, *Q. indica*, *W. filifera*, *C. mitis*, *R. ragia*, *S. reginae*, *A. vasica*, *C. variegatum*, *D. thunbergiana*.

4. *N. cucumeris* (Oudemans)

Host plant: *A. marginta*, *P. alba*.

5. *N. enab* El-Badry

Host plant: *C. ambrosioide*, *F. nitida*.

6. *N. longispinosus* (Evans)

Host plant: *N. oleander*, *L. indica*, *C. splendens*.

7. *Typhlodromips swirskii* Athias-Henriot

Host plant: *R. hybrida*.

8. *Typhlodromus balanites* El-Badry

Host plant: *B. spectabilis*.

9. *T. pyri* Schueten

Host plant: *A. marginta*.

10. *T. siwa* El-Badry

Host plant: *M. chamomilla*, *F. vulgare*, *A. graveolens*, *M. viridis*, *O. basilicum*, *O. marjorana*, *C. sempervirens*, *F. nitida*, *J. sambac*, *J. grandiflorum*, *C. revoluta*.

11. *T. tetramedius* Zaher & Shehata

Host plant: *A. graveolins*.

Family Uropodidae Berlese

1. *Trichouropoda patavina* (Canestrini)

Host plant: *A. indica*.

2. *Uroobovella krantzi* Zaher & Afifi

Host plant: *F. benghalensis*, *C. mitis*.

ORDER ORIBATIDA

Family Aphelacaridae Grandjean

Aphelacarus acarinus (Berlese)

Host plant: *P. dactylifera*.

Family Cosmochthoniidae Grandjean

Cosmochthonius lanatus (Michael)

Host plant: *N. oleander*, *J. grandiflorum*,
R. ragia.

Family Ctenacaridae Grandjean

Ctenacarus araneola (Grandjean)

Host plant: *C. ambrosioides*, *M. alba*, *M. nigra*,
L. indica, *W. filifera*.

Family Epilohmanniidae Oudemans

Epilohmannia cylindrica Berlese

Host plant: *O. marjorana*, *A. umbellatus*, *P. tobira*,
S. actinophylla, *P. zonale*, *A. marginta*, *C. mitis*,
A. vasica, *C. variegatum*, *C. splendens*.

Family Galumnidae Jacot

1. *Galumna flabillifera* Hammer

Host plant: *O. basilicum*, *F. nitida*, *M. exotica*,
D. thunbergiana.

2. *Pilogalumna* sp.

Host plant: *M. viridis*, *O. basilicum*,
O. marjorana, *A. majus*, *S. leucantha*,
F. benghalensis, *P. zonale*, *R. hybrida*,
A. wilkesiana, *Q. indica*, *S. reginae*, *A. vasica*,
D. thunbergiana.

Family Haplochthoniidae Hammen

Haplochthonius africanus Yousef & Nasr

Host plant: *E. globulus*, *L. indica*,
J. grandiflorum, *P. dactylifera*, *D. thunbergiana*.

Family Haplozetidae Grandjean

1. *Perxylobates mahunkai* Bayoumi

Host plant: *P. sativum*.

2. *Rostrozetes aegypticus* (Yousef & Nasr)

Host plant: *A. saligna*, *B. spectabilis*,
A. wilkesiana.

3. *R. africanus* (Yousef & Nasr)

Host plant: *Begonia* sp.

4. *R. citri* Nasr & Hassan

Host plant: *R. hybrida*, *E. pulcherrima*.

5. *Xylobates souchnaiensis* Abdel-Hamid

Host plant: *A. graveolens*, *M. viridis*,
O. marjorana, *C. pyramidalis*, *P. halepensis*,
S. babylonica, *B. hookeru*, *R. hybrida*,
A. marginta, *A. wilkesiana*, *Q. indica*, *R. ragia*,
S. reginae, *C. variegatum*, *C. splendens*.

Family Lohmanniidae Berlese

1. *Lohmannia egypticus* (El-Badry & Nasr)

Host plant: *M. viridis*, *O. marjorana*,
S. leucantha, *C. pyramidalis*, *S. actinophylla*,
B. hookeru, *F. nitida*, *A. marginta*, *Q. indica*,
C. revoluta, *W. filifera*, *C. mitis*, *S. reginae*,
C. variegatum, *C. splendens*.

2. *Papillacarus aciculatus* Kunst

Host plant: *Begonia* sp.

Family Oppiidae Grandjean

1. *Oppia bayoumii* Shereef & Zaher

Host plant: *A. majus*, *S. reginae*.

2. *O. concolor* Koch

Host plant: *M. viridis*, *O. basilicum*, *O.*
marjorana, *A. maritimum*, *C. pyramidalis*,
O. marjorana, *A. maritimum*, *C. pyramidalis*,

D. regia, *F. nitida*, *F. benghalensis*, *Y. gloriosa*,
R. hybrida, *S. podophyllum*, *A. marginta*,
A. wilkesiana, *Q. indica*, *M. exotica*, *C. mitis*,
S. reginae, *C. splendens*, *D. thunbergiana*.

3. *O. sticta* Popp

Host plant: *A. indica*, *P. tuberosa*.

Family Oribatulidae Thor

1. *Schelorbates laevigatus* (Koch)

Host plant: *M. chamomilla*, *A. indica*,
C. officinalis, *A. majus*, *G. jamesonii*, *D. nutans*,
S. podophyllum, *S. reginae*, *C. variegatum*,
D. thunbergiana.

2. *S. zaheri* Yousef & Nasr

Host plant: *A. majus*, *R. aculeatus*, *M. viridis*,
O. basilicum, *O. marjorana*, *C. fruticosa*,
A. umbellatus, *M. Periwinkle*, *C. pyramidalis*,
T. distichum, *D. fragrans*, *B. hookeru*, *F. nitida*,
J. sambac, *R. hybrida*, *S. podophyllum*, *Begonia*
sp., *A. marginta*, *P. tuberosa*, *Q. indica*,
C. revoluta, *P. canariensis*, *P. dactylifera*,
W. filifera, *C. mitis*, *R. ragia*, *S. reginae*,
A. vasica, *C. variegatum*, *C. splendens*,
D. thunbergiana.

3. *Zygoribatula sayedi* El-Badry & Nasr

Host plant: *C. sativum*, *A. graveolens*,
C. officinalis, *M. viridis*, *O. basilicum*,
P. sativum, *R. hybrida*, *P. tuberosa*.

4. *Z. tritici* El-Badry & Nasr,

Host plant: *F. vulgare*, *C. sativum*,
A. graveolens, *P. sativum*, *A. maritimum*,
C. pyramidalis, *F. nitida*, *R. hybrida*, *M. exotica*.

These findings are likewise those presented by Hanna *et al.* (1981) who listed some of these previous species among the collected mites of 46 ornamental and medicinal plants at Giza and Qalyoubia Governorates, which averaged 29 mite species. In addition, some of these species were recorded by Hassan *et al.* (1986) who collected mites inhabiting desert plants in Sinai Peninsula regions and new reclaimed lands and sorted 110 mite species belonging to 68 genera and 34 families.

Among the collected species, one species belongs to genus *Euseius*, *E. plumerii* sp. n. of family Phytoseiidae. Some new phytoseiid species of genus *Euseius*, have been observed by Qayyum *et al.*

(2004); Bashir *et al.* (2006) and Bayan & Merheb (2006). Meanwhile, 24 species are firstly recorded on plants or in soil belongs to several families; seven species of the family Acaridae: *A. siro*, *R. callae*, *T. brevicrinatus*, *T. longior*, *T. perniciosus*, *T. tropicus* and *T. similis*. Six species of the family Parasitidae: *E. cavernicola*, *G. spiniger*, *P. fucorum*, *P. hyalinus*, *P. lunulata* and *V. remberti*. Five species to each of the families; Cunaxidae: *A. anastosi*, *C. buartus*, *P. americanus*, *P. glebulentus* and *P. subterraneus*; and the family Cheyletidae: *A. kulagini*, *A. sollers*, *C. volgini*, *C. wellsi* and *M. cunliffei*. Koç (1998) recorded the cheyletid mite, *A. volgini* from Turkey's fauna. Doğan and Ayyildiz (2004) recorded the two cheyletid mites, *C. wellsi* and *Hypopicheyla elongata* Volgin from Turkey. Moreover, one species of the family Tarsonemidae, *S. hatzinikolisi* has been recorded for the first time.

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