**KEYS FOR IDENTIFICATION OF GENERA AND SPECIES OF THRIPS (THYSANOPTERA: THRIPIDAE) FROM MIDLE OF IRAQ**

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**ABSTRACT**

Keys for 22 species representing 10 genera of Thripidae were provided collection of samples carried out during 1999-2001 in different localities in the middle of Iraq. Of them four species are described as new to science, *Frankliniella megacephala* sp. nov; *Retithrips bagdadensis* sp. nov; *Chirothrips imperatus* sp. nov; *Taeniothrips tigridis* sp. nov; Another fourteen species are recorded for the first time in Iraq; *Thrips meridionalis* (Pri.); *Microcephalothrips abdominalis* (Crawford *Scolothrips sexmaculatus* (Pergande));*Scolothrips pallidus* (Beach); *Scritothrips mangiferae* Pri.; *Frankliniella tritici* Bagnall; *Frankliniella schultzie* Trybom; *Retithrips aegypticus* Marchal; *Retithrips javanicus* Mayet; *Taeniothrips gowdeyi* (Bagnall); *Chirothrips meridionalis* Bagnall; *Chirothrips mexicanus* Crawford; *Chirothrips hamatus* Trybom; and four species reported previously for Iraq; *Thrips tabaci* Lindeman; *Retithrips syriacus* Mayet; *Parascolothrips priesneri* Mound; *Anaphothrips sudanensis* Trybom; on different plants.

**INTRODUCTION**

Family Thripidae is one of the largest Thysanoptera families, included four subfamilies, and 1710 species (Mound, 1997; Heming, 2000). In Iraq no more studies to identification thrips, found in filed, garden, green house, A wild distribution, and need different temperature and humidity, Some species can found on one plant as *Microcephalothrips abdomenalis* (Crawford) called (a composite thrips) and *Anaphothrips sudanensis* Trybom (called a grass thrips) and *Chirothrips spp.* a (gramany thrips).

**RESULT**

Diagnostics characters of family Thripidae:  
Antennae eight-nine segments, sense cone on third and fourth segments simple or forked, maxillary palp two-three segment, legs normal tarsi with one-two segment some times with a claw, reticular only on pterothora10. Pronotum with a micro seta on a disk, each hind angle carried pair of consumption seta, wings pale with two-three longitude veins on fore wing only, upper vein elongate behind anterior marginal wing (coastal wing), hind wing pale without

* Apart of M. Sc. Thesis of the first author.
Key for Identification


The family divided to four subfamilies: Panchaetothripinae, Thripinae, Sericothripinae and Dendrothripinae.

1- Subfamily Panchaetothripinae:

Reticulum on whole body, antennae heliothripod, and eight segments longer than seventh segment. Wings broad at base, first vein fused with coastal margin and content the ambient vein. Apex of abdomen provide with a spiny or strongly seats. There are 33 genera and 120 species beyond to this subfamily. In this study recorded only genus Retithrips.

2- Subfamily Sericothripinae:

Pale yellowish in color, small in size, antennae eight segmented sense cone on third and fourth segments forked, seta of wing sperted on first vein, and a serial on seconded vein, hind angel of Pronotum carried one seta at each side, whole body covered with a micro seta’s specially on abdominal segmented one-eight and became less at segments nine and ten (Mound & Walker, 1982), In this study recorded genus Scritothrips.

3- Subfamily Thripinae:

It is the largest one for this family, different in their characters, the reticulum weakly on pterothorax only, antennae six-eight or nine segmented, the apex segmented small or some time equal in length, wings vein prominent, apex of abdominal segment provide with long, strong seta some times a spiny. Divided to two Tribe : Chirothripini; Thripini (Mound & Walker, 1982).

A- Tribe Chirothripini:

Head elongted between antennae basic, antennae eight segmented, seconded segmented with a projection at outer side, sense cone on third and fourth segments simple or forked, Pronotum not equal in anterior and posterior margins the lateral as 1.2 – 1.3 times as the first. Abdomen provide with a strong seta at apex, as in genus Limothrips, in Iraq recorded only genus Chirothrips.

B- Tribe Thripini:

Antennae six-eight or nine segmented, sense cone on third and fourth segmented simple or forked. Pronotum equal in there anterior and posterior margins, different in habit, feeding on wild host plant, some of them are predator, feeding on small Arthropod, in Iraq recorded the genera; Thrips; Microcephalothrips; Scolothrips; Parascolothrips; Anaphothrips; Taeniothrips; Frankliniella.
Key to the Iraqi genera of family Thripidae:

1- Reticulum at whole body, antennae heliothripod, Pronotum equal at anterior and posterior margins, more longer that the lateral, three callosities on fore wing, ambient vein present, posterior margin of abdominal segmented with a strongly structure like teeth on each sides, comb present, dark brown color on Vitis leaf (fig.1)

- Not as above………………………………………………………...2

2- Antennae 7 segmented………………………………………………3

- Antennae 8-9 segmented……………………………………………5

3- Hind angel of Pronotum with One pair of short seta, posterior margin with 4-5 pairs of micro seta , posterior margins of abdominal segment 1-8 with chitin structure, wings seta few, distance at arranged, brown-yellowish in color. On sunflower, (Fig.2)

- Hind angel of Pronotum with Two pairs of long seta, consumption, more than 5 pairs seta on posterior margin, posterior abdominal segmented smooth, color and size different………………………………..4

4- Antennae segmented carried micro seta, maxillary palp 3 segmented, comb present, abdominal segment cylindrical in shape, wild distribution (Fig.3).………………………………………………..Thrips Linn.

- Antennae segmented without micro seta, maxillary palp 2 segments, fore wing with 3 brown spots, comb absent, posterior abdominal margin not slightly, and pale brown in color, predator on small insects. (Fig.4) ………………………………………..Parascolothrips priesnieri Mound.

5- Pronotum symmetrical in shape, hind angle with 1-2 seta or none.2nd antennal segment symmetrical, sense cone on segment 3,4 forked, head normal………………………………………………………………..6

- Pronotum a symmetrical, hind margin with 1.2 – 1.3 times as fore margin,2nd antennal segment asymmetrical with projected at the outer side, sense cone on segments 3,4 forked or simple, head elongend between antennae basal (Fig.5)…………………………………………………………..Chirothrips Haliday

6- Fore and hind Pronotum angels provide with 1-2 long seta, abdominal segmented carried a micro seta or none………………….9

- Fore Pronotum angels without seta, hind angel with 1-2 prominent seta, that’s on tip abdominal strong………………………………………………………………..7

7- One seta at each hind angel of Pronotum or none, comb present, different in size and color……………………………………………………………….8

- 2 seta at each hind angel of Pronotum, no micro seta at abdominal segment, brown-yellowish in color (Fig.6)………………Taeniothrips Amyot & Serville

8- One seta at each hind angel of Pronotum, abdomen covered with micro seta, seta on abdominal segments 9 and 10 long, pale (Fig.7)………………Scirtothrips Shull ( as Scir.mangiferae Pri )

- Hind angels of Pronotum without seta, that’s on abdominal segmented 9-10 strong and long (Fig.8)………………Anaphothrips Uzel (as Ano sudanensis Trybom )

9- Bodies seta long, pale, fore wing with three brown spots, setae of veins a few, distances
Key for Identification

arrange, pale brown-yellowish in color, predator
(Fig.9)............................................Scolothrips Hinds
- Bodies seats shorter, dark or brown, fore wing pale, setae of veins arranged in a serial on
veins, color and size different (Fig.10)...........Frankliniella Karny

Key to the Iraqi species of Thrips L.
1- Abdominal sternites 2-8 provide with a ccsossary seta, lateral target of abdominal
segment without micro seta, Ovipositor short, base of sixth antennal segment convex, large
species 1.4-1.5 mm in length, brown-yellowish in color (Fig.11)....................meridionalis(Priesner)
- Abdomenal segmented without a ccsossary seta, lateral target with micro seta, ovipositor
long, base of sixth antennal segment circular, 0.9-1.5 mm in length, pale yellowish, brown-
yellowish in color, wild distribution (Fig.3)..........................tabaci Lindeman

Key to the Iraqi species of Scolothrips Hinds
1- First spot’s wing attach the fore margin, antennae segmented 2-8 shaded with grayish
color, lateral segments 3, 4 not circular (Fig.12).......................sexmaculatus (Pergande)
- First spot’s wing not attaches the fore margin, antennal segments 2-8 not shaded, lateral
segmented 3, 4 circular (Fig. 9)............pallidus (Beach)

Key to the Iraqi species of Retithrips Marchal
1- Fore wing with three callosities, sense cone on segments 3, 4 simple or
forked.................................................................2
- Fore wing two callosities, sense cone simple (Fig.13)...........javanicus Karny
2-All callosities at straight...........................................3
- Callosities not at a straight, sense con on 3rd antennal segment very short
(Fig.14)..............................................................bagdadensis sp.nov.
3-Sense cone on segments 3, 4 forked (Fig.15).............aegypticus Marchal
- Sense cone simple, normal in length (Fig.1)...........syriacus (Mayet)

Key to the Iraqi species of Frankliniella Karny
1- Comb present, abdominal segmented 9 with 4 long seta, that’s on wings; 23:18:15, dark
brown in color (Fig.16).........................tritici Bagnall
- Comb absent, more than 4 seta on abdominal segmented 9, setae of wing different, color
and size different ........................................2
2- Tubular ocelli present, eyes close at head side, antecocular setae ainside at front, setae of
wing; 20:18:14 (Fig.10)..................schltzie Trybom
- Tubular ocelli wanting, eyes far away from head sides, anterocular seta different in placed,
setae of wing different ........................................3
3- Eyes distance 9-10 M from head sides, anterocular seta within it, setae of wing; 25:17:12
(Fig.17)..........................unicolor Morgan
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- Eyes distance 28-30 M, anterocular seta airsde at anterior ocelli, setae of wing; 27:19:15 (Fig.18) megacephala sp. nov.

Key to the Iraqi species of Taeniothrips Amyot & Sereville
1- Ommatidia not arranged as serial on outer margin of eyes, primary comb present, setae of wing; 23:11:13 (Fig.6) gowdeyi (Bagnall)
- Ommatidia arranged as serial on outer margin of eyes, comb absent, setae of wing; 27:10:13 (Fig.19) tigridis sp. nov.

Key to the Iraqi species of Chirothrips Haliday
1- 2nd antennal segment with a projection at outer side ……2
- 2nd antennal segment normal…………………………3

2- Sense cones on antennal segments 3,4 forked, head not elongate between antennal basal, scallopus on pterothorax weakly, posterior margin of abdominal segmented 2-8 provided with chitin structure, male winged, glandular area circular, small in size (Fig.20) meridionalis Bag.
- Sense cones on antennal segmented 3,4 simple, head elongate between antennal basal, scallopus strongly on pterothorax, posterior margin of abdominal segmented 2-8 smooth (Fig.2) mexicanus Crawford

3- Fore tibia dented in sex, male wingless, ocelli absent, (Fig.22) imperatus sp. nov.
- Fore tibia not dented, male unknown (Fig.5) hamatus Trybom

REFERENCES
Key for Identification


Fig. 1
Retithrips syriacus (Mayet)
(A) – a Metasternum. 1-long seta (400x)  b-fore leg,4- the dentate  c-fore wing, 2-
the three spots on the anterior m
Key for Identification

Fig. 2
Microcephalothripa abdominalis Bagnall
7th, 8th abdominal segment
a- on tergum, b- on sternum
argin, 3- the ambient.
(B)- a head, b- antenna c- pronotum,(400x)
Fig. 3

Thrips tabaci Lind.

a- pronotum (400x). b- fore leg (400x), 2- coxa, 3- trocner, 4- fumer, 5- tibia, 6- tarsus ,7- bladder. C- fore wing (400x).
Fig. 4
*Parascolothrips priesneri* Mound

(A) - a- head with tubular ocelli (400x), b- antenna (1000x).

(B) a- pronotum (400x), b- fore wing (200x).
Fig. 5

*Chirothrips hamatus* Trybom

a- prothorax (400x). b- fore leg (400x), 1- the dentate on outer fumer margin, (400x). c- fore wing (400x). d- abdominal segment 8-10 (400x).
Key for Identification

Fig. 6
Teaniothrips gowdeyi (Bagnall)
a- pronotum (400x), b- fore wing (200x).
Fig. 7

*Scirtothrips mangiferae* Priesner

a- fore wing (200x).  b- abdominal segment 7-10 (100x)
Key for Identification

Fig. 8
*Anophthrips sudanensis* Uzel
a- fore wing (200x). b- abdominal segment 8-10 (400x).
Fig. 9
*Scolothrips pallidus* (Beach)
(A)- a- head (400x). b- antenna (1000x). c- prothorax (400x).
(B)- a - fore wing (200x). b- abdominal segment 8-10 (400x).
Key for Identification

Fig. 10
Franklinella schultzie (Trybom)
a- pronotum (400x). b- fore wing (200x).
(Fig. 11)

*Thrips meridionalis* (Pri.)

(A)- antenna (1000x). (B) - 8th abdominal segment
Key for Identification

(Fig. 12)
Scolothrips sexmaculata (Pergande)
A- Pronotum (400x). B- fore wing (200x). C- 8th, 9th abdominal segment.
(Fig.13)

Retithrips javanicus Mayet
a- antenna (1000x). b- fore wing (200x), 1- the ambient vein.
Key for Identification

(Fig.14)
Retitheips bagdadensis sp.nov.
a-antenna. (400x). b- fore wing (200x), 1- the ambient veiv.
Retithrips aegypticus Marchal
A- antenna with forced sense cones on 3rd, 4th segments (400x). B- fore wing, 1- the ambient vein (200x).
Key for Identification

(Fig. 16)

*Frankliniella tritici* Bagnall.

B- Pronotum (400x). C- abdomen segment 8,9 (400x).
(Fig. 17)

Frankliniella unicolor Morgan.
A- Head (400x). C- pronotum (400x).
Key for Identification

(Fig.18)
*Frankliniella megacephala* sp.nov.
A- Head (400x). C- pronotum (400x).
(Fig. 19)
*Teaothrips tigridis* sp. nov.
A-Head, 1-serial ommatidia. 2- the bridge on frons (400x).
C- prothorax (400x).
Key for Identification

(Fig. 20)

*Chirothrips meridionalis* Bagnall

A- Antenna (1000x).

B- Abdomen segment 8,9,10 (400x).
(Fig. 21)

*Chirothrips mexicanus* Crawford

(A)- Head (400x).
(B)- The scallopus on pterothorax from tergum (400x).
Key for Identification

(Fig. 22)
*Chirothrips imperatus* sp.nov.

(A)- prothorax (400x).

(B)- fore leg (400x), 1,2 the dentine on fumer and tibia.
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**TA튼 (THYSANOPTERA: THRIPIDAE)(**

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*ويَد وَحَدَناَغْفَطَاء** **وسَرَلَمَدِيْحَ قُسْمَةً

**قُسْمَ وَقِيَٰمَةَ الْبَيْنَاتِ. كَلَّيْةَ الزَّرَاةِ. جَامِعَةَ بَغْدَادَ

**مَتَحَفَّ الْأَثَرِيَّةَ الطَّيْعِيَّ. جَامِعَةَ بَغْدَادَ. الْوَقْعَ.

صِغْرَةَ لَحْيَةِ لَمْ تُقْدِرْهُ ٢٢ ذِبَحًةً وَعَمْلَةً إِلَى زُرْعِ نَجِيَّةٍ عَرْمَجَهُتْ. لَمَمَّا لَمْ أَدْخَلَهُ طَنْطَالَ طَنْطَالَ لِقَارَ أَطْرَافِ. فيِّ تَانِغُدَ ١٩٩١-١٩٩٢. مَعَاءَلْ قَدِيمَ عَلَا مِنْ لَا مَعْلُوْ.

*Frankliniella megacephala* sp. nov; *Retithrips bagdadensis* sp. nov; *Chirothrips imperatus* sp. nov; *Taeniothrips tigridis* sp. Nov.

*IEEE:*

*Thrips meridionalis* (Pri.); *Microcephalothrips abdominils* (Crawford Scolothrips sexmaculatus (Pergande).); Scolothrips pallidus (Beach); Scritothrips mangiferae Pri.; Frankliniella tritici Bagnall; Frankliniella schultzij Trybom; Frankliniella unicolor Morgan; Retithrips aegypticus Marchal; Retithrips javanicus Mayet; Taeniothrips Gowdeyi (Bagnall); Chirothrips meridionalis Bagnall; Chirothrips mexicanus Crawford; Chirothrips hamatus Trybom.

*IEEE:*

*Thrips tabaci* Lindeman; *Retithrips syriacus* Mayet; *Parascolothrips priesneri* Mound; *Anaphothrips sudanensis* Trybom.

* IEEE:*

*33* عَلَا نَحْالَيْنِ عَلَيْهِ. جَلْوَلْاً. دَوْلَةً. وَكَأْنَاءُ حَلْماً.