

## Redescription of the Morphology of the Turnip Aphid Species, *Lipaphis erysimi pseudobrassicae* Davis (Homoptera: Aphididae)

Shahinaz, A. Abdel-Salam and M. A. Ahmed

Plant Protection Research Institute, Agricultural Research Center, Dokki-Giza, Egypt.

Received: 29 /4/2007

**Abstract:** *Lipaphis erysimi pseudobrassicae* Davis is a harmful aphid species to rape and turnip plants. This species was described in Egypt by Habib and El-Kady (1961). Their description was not identical to the original description of the species. Accordingly, the present study dealt with a redescription of *Lipaphis erysimi pseudobrassicae*. Specimens were collected from rape and turnip plants from Giza and North Sinai governorates, Egypt. Dr. Susan Halbert from U.S.A. and Dr. Paul Brown, U.K. confirmed the present identification of this aphid species. Aphid individuals of this species are easily recognized their colour and the different morphological characteristics, presented in this article.

**Keywords:** Redescription, Morphology, *Lipaphis erysimi pseudobrassicae*

### SYNONYMY

*Lipaphis erysimi* Kalt, 1843.

*Aphis pseudobrassicae* Davis, 1914.

*Aphis mathiolellae* Theobald, 1918.

*Lipaphis erysimi pseudobrassicae* Davis, 1928.

*Rhopalosiphum pseudobrassicae* Hottes and Frison, 1931.

### INTRODUCTION

The turnip aphid species, *Lipaphis erysimi pseudobrassicae* Davis (Homoptera: Aphididae) is a common aphid species, found wherever Cruciferous plants are grown. It prefers rape and turnip plants, as it attacks the new tender terminal growth. Infested leaves are smaller in size and curled. Also, secretion of honey dew serves as a medium for sooty mold fungus growth on the infested leaves.

In Egypt, it was first recorded by Theobald (1918) as *Aphis mathiolellae*. Hall (1926), recorded on *Brassica nigra* and *B. rapa*. Habib and El-Kady (1961) caught this species in the light trap at Kouba Palace, in Cairo. Its occurrence had been reported in Illinois, U.S.A (Frederek and Theodore, 1931), Asia, Africa and Europe (Bodenheimer and Swirski, 1957), East and West Africa (Eastop, 1958 & 1961) and California, U.S.A (Tokuwo and Charles, 1977). The description of this species presented by Habib and El-Kady (1961) was not identical to the original description by Davis (1914).

### MATERIALS AND METHODS

Fifty specimens from alate and apterous forms of *L. erysimi pseudobrassicae* were collected from rape (*Brassica napus*) and turnip (*Br. rapa*) leaves at Giza and North Sinai Governorates during the period from February to May 2005. Specimens were kept in absolute alcohol, macerated in lactic acid, cleared in phenol-chloralhydrate and mounted in Swan's medium (some in Canada balsam) for taxonomic studies. Drawing of both forms was conducted by using a Camera Lucida. Biometric measurements were carried out by means of micrometer lens.

### RESULTS AND DISCUSSION

#### A- Apterous viviparous female (Fig.1):

##### I- General morphology of living specimens:

Form globular, small to medium sized, yellowish green or olive green and often covered with grey waxy dust. Head blackish. Eyes almost black. Proboscis dusky at apex, reaching the second coxae. Antennae blackish, 1st and 2nd segments olivaceous, 3rd pale at base and dark at apex; 4th, 5th and 6th and apex of the sixth slightly paler.

Prothorax yellowish green. Legs, coxae and trochanter greenish, femora dusky greenish, apex of tibiae and tarsi dusky.

Abdomen yellowish green with dorsal pigmentations. Dorsal abdominal hairs short. Cornicles apparently dusky, imbricated and slightly swollen at apex. Cauda obscure. Anal plate darker than cauda.

##### II- Microscopic description:

Body length 2.37 mm long, ranged between 2.32 and 2.65. Body width 1.58 (1.46–1.67) mm. Proboscis long, reaching mid coxae, apical rostral segment 0.11 mm long with 4 secondary hairs. Antennal tubercles moderately developed. Antennal hairs short. Antennal formula 6-3-4-5, 6 segmented, shorter than body, 1.3 mm long, ranged between 1.19 and 1.44 mm. First segment broad, as long as the second, 0.08 mm long. Third segment 0.39 (0.36–0.43) mm long. Fourth segment 0.19 mm long, ranged between 0.16 and 0.23 mm. Fifth segment 0.16 (0.13–0.19) mm long. Sixth segment 0.4 (0.34–0.45) mm long. Unguis about three times as long as basal part, basal part 0.11 mm long, unguis 0.29 (0.23–0.33) mm long. The antennae without secondary rhinaria. Primary rhinaria present, one circular at apex of fifth segment, another one placed at apex of basal part of sixth segment. A group of small Tarsus two-segmented, terminal segment longer accessory rhinaria present beside primary of sixth segment. than basal one, 0.14 mm long, with 6 secondary hairs and carrying two claws.

Siphunculi 0.26 mm long being longer than cauda (0.19 mm long). Cauda broad at the base, tapering towards the tip, and slightly constricted at the middle, cauda bears 5 lateral hairs. Anal plate provided with numerous hairs.

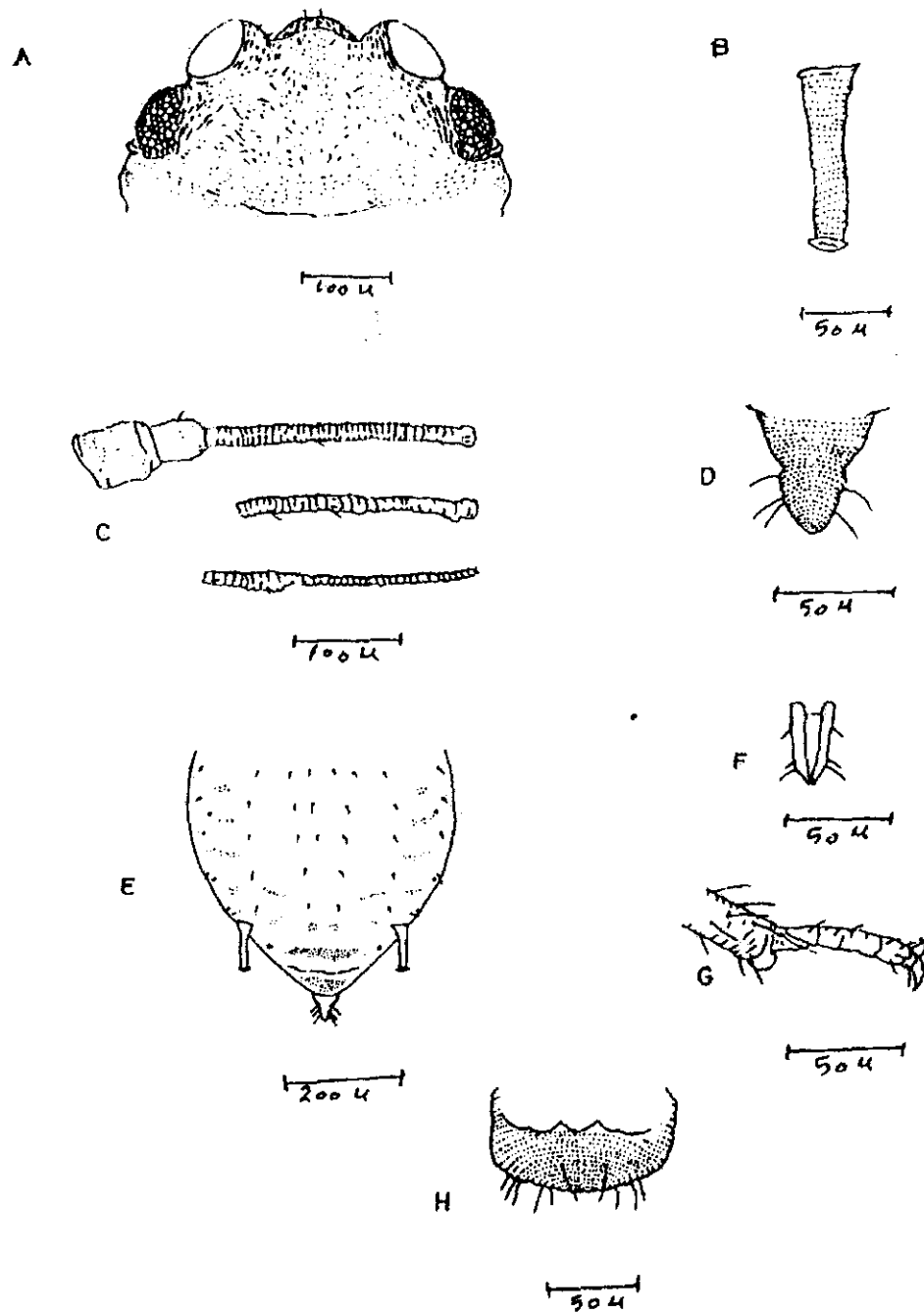


Fig. (1): Apterous viviparous female of *Lipaphis erysimi pseudobrassicae* (Davis): A- Head (dorsal view), B- Siphunculus, C- Antennae D- Cauda, E- Abdomen (dorsal view), F- Apical rostral segment (ventral view), G- Hind tarsal segment, H- Anan plate.

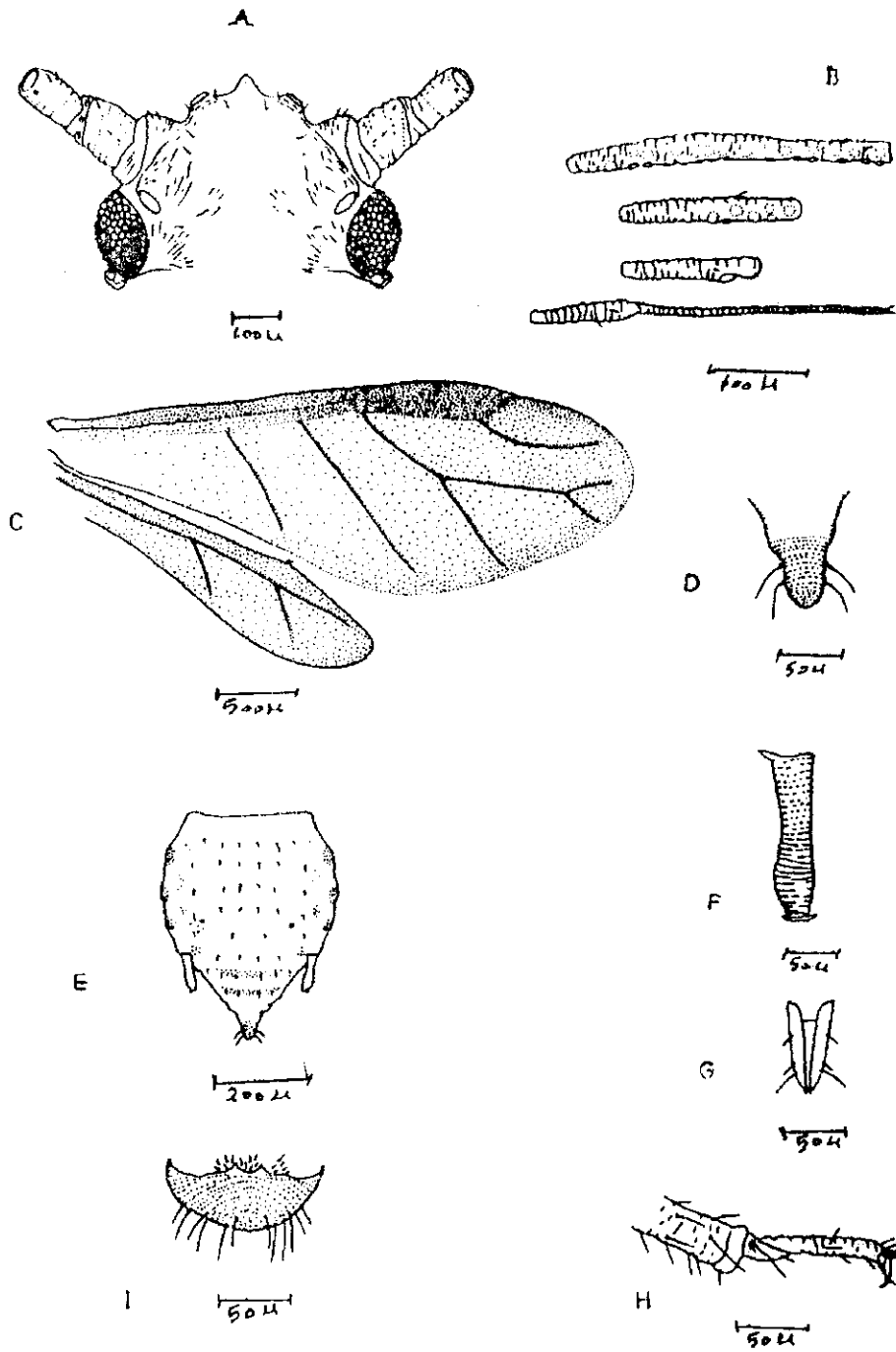


Fig. (2) : Alate viviparous female of *Lipaphis erysimi pseudobrassicae* (Davis) : A- Head (dorsal view), B- Antennae, C- Fore and hind wings, D-Cauda, E- abdomen (dorsal view), F- Siphunculus, G- Apical rostral segment (ventral view), H- Hind tarsal segment, I- Anal plate.

**B- Alate viviparous female (Fig. 2):****I- General morphology of living specimens:**

Alates are small to medium size and dull green. Head dusky olivaceous to blackish. Eyes dark brown and almost black. Proboscis dusky at apex reaching the coxae. Antennal 1st and 2nd segments olivaceous; 3rd pale at base, dark at apex; 4th, 5th and 6th segments black and apex of the sixth slightly paler.

Prothorax yellowish green, wing venation normal, main veins clear and dusky. Legs dusky greenish, coxae and trochanters greenish, femora dusky greenish, tibiae yellowish black at the apex and tarsi black.

Abdomen dusky green and without dorsal pigmentations. Three blackish brown spots on the sides of the abdomen in the front of the cornicles. Dorsal abdominal hairs short. Cornicles dusky at base, dark at apex and imbricated and swollen at apex. Cauda blackish-brown. Anal plate darker than cauda.

**II- Microscopic description:**

Body length 2.14 mm long, ranging between 2.04-2.27 mm. Body width 1.1 (0.99-1.11) mm. Proboscis long, reaching the second coxae. Apical rostral segment 0.11 mm long with 4 secondary hairs.

Antennae shorter than body, 1.43 (1.37-1.52) mm. long, 6 segmented. Antennal tubercles moderately developed. Antennal hairs short. Antennal formula 6-3-4-5. First segment broad, as long as the second, 0.08 mm long. Third segment 0.41 (0.36-0.43) mm long. Fourth segment 0.22 (0.19-0.24) mm long. Fifth segment 0.19 (0.16-0.21) mm long. Sixth segment 0.45 (0.41-0.48) mm long.

Unguis 0.34 (0.29-0.36) mm long, about three times as long as basal part, 0.11 mm long. Antennae with secondary rhinaria, the third antennal segment had 8-16 sensoria spread over the whole length of the segment, while the fourth has 2-8 sensoria. Primary rhinaria present, one circular at apex of fifth segment, another one placed at apex of basal part of the sixth segment.

A group of small accessory rhinaria present beside

primary of sixth segment.

Tarsus two-segmented, terminal segment 0.14 mm long, being longer than basal one with 4 secondary hairs and carrying two claws. Siphunculi swollen at the tip, longer than cauda and 0.26 mm long. Cauda short, 0.19 mm broad at the base, tapering towards the tip and slightly constricted at the middle. Cauda bears 4 secondary hairs. Anal plate provided with numerous hairs.

Dr. Susan Halbert, Division of Plant Industry, Department of Agricultural and Consumer Services, Florida state, U.S.A confirmed that the drawing of Habib and El-Kady (1961) for *Lipaphis Erysimi pseudobrassicae* (Davis) does not resemble the original description of this species. She confirmed that the present slides and description resemble the original description.

This was the main reason for the present redescription of this specie.

**REFERENCES**

- Bodenheimer, F. and Swirski, E. (1957). Aphidoidea of the Middle East. (Weizman Science Press, Jerusalem, p. 264).
- Eastop, V.F. (1958). A study of the Aphididae (Homoptera) of East Africa. (pp. 42-43).
- Eastop, V.F. (1961). A study of the Aphididae (Homoptera) of West Africa. (pp. 23-24).
- Habib, A. and EL-Kady, E.A. (1961). The Aphididae of Egypt. (Bull. Soc. ent. Egypte, XLV: 86-87).
- Hall, W.J. (1926). Notes on the Aphididae of Egypt. (Tech. Sc. Serv. Min. Agric. Egypt, Bull., 68: 24-25).
- Theobald, F.V. (1918). African Aphididae. (Bull. Ent. Research, VIII, p. 284).
- Tokuwo, K. and Charles, P. (1977). Hand book of Agricultural Pests in California, U.S.A. (pp. 46-48).

## إعادة الوصف المورفولوجي لحشرة المنّ *Lipaphis erysimi pseudobrassicae* علي نباتات العائلة الصليبية

شاهيناز عطية عبد السلام - مجدي عبد العظيم أحمد  
معهد بحوث وقاية النباتات - مركز البحوث الزراعية - وزارة الزراعة - الدقي

وصف حبيب والقاضي هذا النوع من المنّ عام ١٩٦١ تشتمل هذه الدراسة إعادة وصف نوع المنّ *Lipaphis Erysimi pseudobrassicae* من عينات جمعت في مصر عام ٢٠٠٥ من علي نباتات الشلجم واللفت في محافظتي الجيزة وشمال سيناء. قنمت الصفات المورفولوجية للحشرات الكاملة الغير مجنحة والمجنحة مع تقديم الرسوم اللازمة. تم تأكيد الوصف المقدم وتعريف النوع بواسطة باحثين متخصصين في الولايات المتحدة وبريطانيا.