NEW RECORDS FOR APHID FAUNA OF TURKEY FROM SAMSUN PROVINCE

Başak Akyürek*, Ünal Zeybekoğlu, Gazi Görür*** and Murat Karavin******

* Amasya University, Science & Arts Faculty, Department of Biology, Amasya, TURKEY. E-mail: basakayurek@hotmail.com
** Ondokuz Mayıs University, Science & Arts Faculty, Department of Biology, Samsun, TURKEY. E-mail: unalz@omu.edu.tr
*** Niğde Ömer Halisdemir University, Science & Arts Faculty, Department of Biotechnology, Niğde, TURKEY. E-mail: gazigorur@yahoo.com
**** Amasya University, Suluova Vocational High School, Amasya, TURKEY. E-mail: murat.karavin@amasya.edu.tr

[Akyürek, B., Zeybekoğlu, Ü., Görür, G. & Karavin, M. 2019. New records for aphid fauna of Turkey from Samsun province. Munis Entomology & Zoology, 14 (2): 383-388**]**

ABSTRACT: Twelve new aphid records had been given in this study are results of the studies performed between 2009 and 2012 in order to determine the aphid fauna of Samsun province. New records for Turkey are; *Aphis esulae* (Börner, 1940), *Aphis odinae* (van der Goot, 1917), *Aphis rubicola* Oestlund, 1887, *Aphis stachydis* Mordvilko, 1929, *Cavariella salicis* (Monell, 1879), *Cinara neubergi* (Arnhart, 1930), *Cinara occidentalis* (Davidson, 1909), *Macrosiphoniella millefolii* (De Geer, 1773), *Megoura nigra* Lee, 2002, *Myzus cornutus* Medda ve Chakrabarti, 1986, *Pterocomma rufipes* (Hartig, 1841), *Sitobion africanum* (Hille Ris Lambers, 1954). Number of the species in Turkey aphid fauna increased about to 560 with these new records.

KEY WORDS: New records, aphid, Samsun, Turkey

Aphids are an important phloem sap-sucking insect group due to their small size, high fecundity, short development time, cyclical parthenogenetic reproduction, diverse host-plant preferences and close relationship with their host plants. There are about 5100 described aphid species worldwide in about 510 presently accepted genera (Blackman & Eastop, 2018; Favret, 2018) and about 540 species are recorded from Turkey (Şenol et al., 2014; Özdemir & Barjadze, 2015; Şenol et al., 2017; Görür et al., 2017). Turkey is a geographically large country and has different types of climatic conditions, large and various agricultural lands and very rich flora which 31% of this is endemic. Therefore, Turkey is important, diverse and fascinating area for aphids, but there are still many unstudied areas. Early studies about Turkey's aphid fauna were performed by foreign researchers at the beginning of the 1900s. Many following studies were conducted in order to determine the Turkish aphid fauna and were added many new records. Çanakçıoğlu (1975) revised all previous studies and listed 258 aphid species in his book that is first revision and called "*Aphidoidae of Turkey*". New additions for the aphidofauna of Turkey which have been added from this revision to 2006 were summarized by Remaudiere et al. (2006) and have been listed 417 species. More recently, Toper Kaygın et al. (2008), Eser et al. (2009), Görür et al. (2009a,b), Akyürek et al. (2010), Toper Kaygin et al. (2010), Akyürek, et al. (2011), Tepecik et al. (2011), Barjadze et al. (2011) and Görür et al. (2011a,b) listed about 60 new records of Turkey aphid fauna. Once for all, a checklist of the Turkish aphidofauna have been published by Görür et al. (2012) and listed 480 species in 141 genera. After the checklist, Şenol et al. (2014) 9, Barjadze & Özdemir (2014) 1 (One new genus), Barjadze et al. (2014) 2 (two new species),

Şenol et al. (2015a) 19, Özdemir & Barjadze (2015) 3, Şenol et al. (2015b) 7, Özdemir & Barjadze (2015) 3; Şenol et al. (2017) 15 and Görür et al. (2017) 8 new records added to the turkish aphidofauna. In recent study, we added 12 new records for Turkey aphid fauna.

MATERIAL AND METHOD

Samples were collected from Samsun Province in Middle Black Sea Region between 2009 and 2012. The samples were processed in the laboratory based on the methods offered by Martin (1983). Species were identified according to Blackman & Eastop (2018). The taxonomic status of the species was checked based on Favret (2018) The geographic distribution, general characteristcis and biology of the species were given according to Blackman & Eastop (2018) and Nieto Nafria (2018). Also, host plants and distinguishing features of each determined species were given. Voucher samples were stored at the Biology Department of Ondokuz Mayıs University.

RESULTS

As a result of identification of the samples collected from Samsun province, 12 aphid species belonging to the Aphididae family have been identified as new records for the Turkish aphid fauna. World distributions, host plants and distinguishing features are presented below.

Family: Aphididae
Subfamily: Aphidinae
Tribe: Aphidini
Subtribe: Aphidina
Genus: *Aphis* Linnaeus, 1758

Aphis esulae (Börner, 1940)

Distinguishing Features: Eyes multifaced. Head without spicules. ANT tubercules absent. ANT less than 0.9x BL and usually without rhinaria on III; ANT PT/BASE 1.5-2.4; Longest hairs on ANT III 0.2-0.5 x BD III. Dorsum membranous. MTu present only ABD TERG 1 and 7. Spiracular apertures reniform. Stridulatory apparatus absent. Cauda finger-shaped, more than its basal width and with 6-10 hairs. Dark SIPH without a subapical annular incision and 0.70-1.37 x cauda. Hind tarsi similar in length to other tarsi (Blackman & Eastop, 2018).
Material Examined: Samsun, Terme, Altunlu Village, on stem of *Euphorbia* sp., 23.V.2010.
Distribution: Austria, Bulgaria, East Siberia, Hungary, Kazakhistan, (Stekolshchikov et al., 2008; Kadyrbekov, 2011; Blackman & Eastop, 2018).

Aphis odinae (van der Goot, 1917)

Distinguishing Features: Body oval. Head without spicules. Eyes multifaced. ANT tubercules little developed; ANT PT/BASE 2.5-3.0. Dorsal abdomen smooth and without dark markings. ABD TERG 1 and 7 constantly with MTu (altough these may be very small). Stridulatory apparatus present and reniform, consisting of a pattern of ridges on ventro-lateral areas of abdominal sternites 5 and 6, and a row of short, peg-like hairs on the hind tibia. Cauda pale, tongue-shaped, tapering and usually much longer than basal width. Pale SIPH with dark apices, much shorter than (0.4-0.6x) cauda and tapering gradually over most of length and with a moderate flange; length of SIPH usually 0.5 or less than the distance between their bases (Blackman & Eastop, 2018).
Material Examined: Samsun, Atakum, İsmet İnönü Boulevard, under leaf of *Citrus* sp., 22.V.2010.

Distribution: Africa–South of Sahara East and South-east Asia (Barbagallo & Alcantara Santos, 1989; Martin, 1989; Blackman & Eastop, 2018).

Aphis rubicola Oestlund, 1887

Distinguishing Features: Smooth head without spicules. Antennal tubercules weakly developed. ANT 6-segmented; ANT I without a projection; ANT PT/BASE 2.0-2.6; Dorsal hairs all less than 1.5 x BD III. Prothorax and ABD TERG 1 and 7 with MTu. ABD TERG 8 with 3-5 hairs. Pale SIPH with dark apices tubular and tapering on distal half; more than 0.12 mm long and 0.8-2.2 x cauda. Cauda with (8-)10-12 hairs. R IV+V with (2-)3-4 accessory hairs (Blackman & Eastop, 2012).
Material Examined: Samsun, Çarşamba, Ağacabey Town, Tilkili Village, on stem of *Rubus* sp., 15.V.2010.
Distribution: North America (Blackman & Eastop, 2018).

Aphis stachydis Mordvilko, 1929

Distinguishing Features: Head without spicules. ANT tubercules undeveloped. ANT usually 6-segmented, more than 0.2 x BL and without sec. rhinaria; ANT PT/BASE more than 1.5. Rostrum longer, length of sclerotised part of stylet Groove more than 0.4 mm. Dorsum pale, without an extensive black sclerotic shield. Dorsal body hairs mostly shorter than BD III and pointed. ABD TERG 1 and 7 with MTu. Cauda finger-like, much longer than its basal width (Blackman & Eastop, 2018).
Material Examined: Samsun, Terme, Gölardı Town, on stem of *Stachys palustris*, 23.V.2010.
Distribution: South, Central and East Europea, To East of West Siberia and Transcaucasia (Jörg & Lampel, 1988; Blackman & Eastop, 2018).

Tribe: Macrosiphini

Genus: *Cavariella* Del Guercio, 1911

Cavariella salicis (Monell, 1879)

Distinguishing Features: ANT PT/BASE 0.6-2.0. Rostrum IV+V 0.85-1.04 x HT II. ABD TERG 8 with a posteriorly projecting above cauda bearing 2 hairs. SIPH clavate; swollen on distal half to at least 1.2 x narrower basal half. Supracaudal process large, conical, extending beyond and usually covering cauda (Blackman & Eastop, 2018).
Material Examined: Samsun, Çarşamba, Dikbıyık Town, on inflorescence of *Oenanthe pimpinelloides*, 15.V.2010.
Distribution: East and Central America (Blackman & Eastop, 2018).

Genus: *Macrosiphoniella* Del Guercino, 1911

Macrosiphoniella millefolii (De Geer, 1773)

Distinguishing Features: BL 2.1-4.1 mm. ANT tubercules variably developed. PT 3.3-4.3 x BASE VI and clearly longer than base of last ANT segment. Rostrum IV+V 0.9-1.2 x HT II. Dorsal hairs long, pointed apices and arising from conspicuous dark scleroites. Marginal tubercules (MTu) absent. SIPH dark, with polygonal reticulation extending over distal 0.06-0.7 and SIPH 0.6-1.0 x cauda (SIPH very evident, only shorter than cauda when it is long, dark and finger-like, and always clearly longer than HT II). Cauda finger-like, more than 2 times its basal width and with 20-32 hairs. Tibia entirely dark Brown to black (Blackman & Eastop, 2018).
Material Examined: Samsun, Asarcık, Gökçepınar Village, on stem of *Achillea* sp., 12.X.2009.
Distribution: Europe, North America, West Siberia, (Blackman & Eastop, 2018).

Genus: *Megoura* Buckton, 1876

Megoura nigra Lee, 2002

Distinguishing Features: Head smooth with well-developed antennal tubercules, their iner faces divergent. ANT III with usually more than 50 (28-64) rhinaria. Rostrum IV+V 0.88-1 x HT II. Tibia pale on basal 0.6-0.7. Dorsal abdomen onterior to SIPH with small

scattered dark markings. Scleroites at bases of dorsal hairs absent. SIPH dark, swollen on distal half and 0.8-1.33 x cauda. Cauda dark (Blackman & Eastop, 2018).
Material Examined: Samsun, Atakum, Mimar Sinan Street, on shoot and stem of *Vicia sativa,* 19.V.2010: Atakum, İsmet İnönü Boulevard, on shoot and stem of *Vicia lutea,* 21.V.2010; Çarşamba, Ağacabey Town, shoot of *Vicia* sp., 15.V.2010.
Distribution: Korea (Blackman & Eastop, 2018).

Genus: *Myzus* Passerini, 1860

Myzus cornutus Medda & Chakrabarti, 1986

Distinguishing Features: Head capsule with nodulose ornamentation. Antennal tubercules well developed, iner faces are gibbous in dorsal view, withouth a finger-like projection. ANT I with iner sides scabrous or smooth. ANT III always without secondary rhinaria. Hairs on ANT III with pointed apices. ANT PT/BASE more than 0.8. Rostrum IV+V 0.85-0.95 x HT II. Tergum pale. Mesosternum without spinal processes. Longest hairs on ABD TERG 1-6 more than 20 μm long, with pointed apices, 0.8 or more x ANT BD III. Marginal tubercules absent. Tibia smooth. SIPH and antennal segments pale not contrastingly two-toned; SIPH tubular and without hairs. Spring generations curling, Rolling, twisting or blistering leaves, but not in closed galls (Blackman & Eastop, 2018).
Material Examined: Samsun, Atakum, Mimar Sinan Street, under leaf of *Prunus persica*, 21.V.2010.
Distribution: India, North-East Pakistan (Naumann-Etienne & Remaudière 1995; Blackman & Eastop, 2018).

Genus: *Sitobion* Mordvilko, 1914

Sitobion africanum (Hille Ris Lambers, 1954)

Distinguishing Features: Eyes multi-facetted. ANT 6-segmented. ANT PT/BASE more than 1. Alata with 4-14 circular or oval secondary rhinaria mostly concentrated on basal half on ANT III. Rostrum IV+V 0.8-0.9 x HT II. SIPH tubular and usually uniformly dark, and dorsal abdomen often with a pattern of dark segmental marking. SIPH with a subapical zone of polygonal reticulation and without hairs (Blackman & Eastop, 2018).
Material Examined: Samsun, Ayvacık, on stalk and under leaf of *Ficus* sp., 24.V.2010. This species also determined from Adıyaman during preparation of the manuscript.
Distribution: Africa, The Island of Indian Ocean, Yemen (Blackman & Eastop, 2018).

Subfamily: Pterocommatinae Wilson, 1910

Genus: *Pterocomma* Buckton, 1879

Pterocomma rufipes (Hartig, 1841)

Distinguishing Features: Antennae 6-segmented. ANT PT/BASE 1.0-2.2 and PT much narrower than BASE; ANT II with 3-7 hairs. ANT BASE VI with only 1-3 long hairs, plus 2-4 short hairs. Longest hair on ANT III 120-150 μm, 3-4 x basal diameter of segment. Alata with usually 25-30 secondary rhinaria on ANT III. Marginal tubercules present and well developed on prothorax and most of ABD TERG 1-7; conical and broad-based, much larger than adjacent hair-bases. SIPH pale, 0.16-0.54 mm long, swollen distally, 1.3-2.4 x HT II, without hairs, with at least a small flange. Cauda rounded with 20-60 hairs (Blackman & Eastop, 2018).
Material Examined: Samsun, Atakum, Balaç Village, on branch *Salix* sp., 02.V.2010; Çarşamba, Çınarlık Town, on branch of *Salix* sp., 15.V.2010.
Distribution: Canada, East and West Siberia, Iceland, Mongolia, Northwest and Central Europe (Pashtshenko, 1988; Blackman & Eastop, 2018).

Subfamily: Lachninae Herrich-Schaeffer, 1854

Tribe: Eulachnini Baker, 1920

Genus: *Cinara* Curtis, 1835

Cinara neubergi (Arnhart, 1930)

Distinguishing Features: ANT V usually with one secondary rhinarium. ANT II bearing 5-10 hairs and ANT BADE VI with 2-8 hairs. Longest hairs on ANT III 110-150 μm long, on hind tibia 150-190 μm long, and on ABD TERG 5 140-180 μm long, arising from larger

scleroites of varying sizes. Rostrum IV 0.15-0.32 mm long, 2.3-2.4 x R V. R IV 1.2-1.5 x HT Iand 0.8 or less x HT II. Largest scleroites on ABD TERG 2-4 of maximum diameter 70-300 μm. HT I 0.16-0.32 mm and without any dorsal hairs. HT II 0.30-0.53 mm and 1.3-1.6 x RIV (Blackman & Eastop, 2012).
Material Examined: Samsun, Vezirköprü, Kunduz Forest, on branch of *Pinus sylvestris*, 26.V.2010.
Distribution: Europe (Blackman & Eastop, 2018).

Cinara occidentalis (Davidson, 1909)

Distinguishing Features: Adult apterae with 6-segmented antennae, at least 0.2 of body lengt. BL 2.1-3.2 mm. ANT PT/BASE less than 1.0. Rostrum much shorter than body. SIPH present as pores on hairy cones which are usually pigmented. Maximum diameter of base of SIPH cone less than 0.3 mm, or less than 3 times the diameter of the SIPH aperture. HT I less than half as long as HT II. HT II at least 4 x longer than the very short, almost triangular HT I (Blackman & Eastop, 2018).
Material Examined: Samsun, Atakum, Alparslan Boulevard, on branch of *Abies* sp., 21.V.2010; Ayvacık, on branch of *Abies* sp., 24.V.2010.
Distribution: Canada, West America (Blackman & Eastop, 2018).

DISCUSSION

Recent global changes in climate, international trade, agricultural activities around the World result in changes in aphid fauna of the countries and regions in any country. Turkey has its own characteristic climatic conditions and variability, geographical locations, agricultural crop richness - large agricultural landscape and one of the richest flora in Europe with about 31 % endemism, despite that only 2.3 % of the Turkey aphid fauna originated from Turkey (Akyıldırım et al., 2013). In addition current number of the Turkey aphid fauna do not reflect real composition compared with neighbouring countries (Görür et al., 2017). In present study, 12 new records were added to the aphid fauna of Turkey. With these new records, the number of species known in Turkey's aphidofauna was increased to about 555. There is a strong probability of a finding new record species or new species due to Turkey's particular conditions. It is expected that further studies will reveal new additional aphid species to the Turkish fauna.

LITERATURE CITED

Angst, A., Scheurer, S. & Forster, B. 2007. First record of *Cinara curvipes* (Patch) (Homoptera, Aphidina, Lachnidae) on *Abies concolor* in Switzerland. Mitteilungender Schweizerischen Entomologischen Gesellschaft, 80: 247-252.
Akyürek, B., Zeybekoğlu, Ü. & Görür, G. 2010. New records of aphid species (Hemiptera: Aphidoidea) for the Turkish fauna from Samsun province. Turkish Journal of Zoology, 34: 421-424.
Akyürek, B., Zeybekoğlu, Ü. & Görür, G. 2011. Further contributions to the Turkey Aphid (Hemiptera: Aphidoidea) Fauna. Journal of Entomological Research Society, 13 (3): 101-106.
Baker, E. A. 2009. Observation of aphids (Aphidoidea) new to Wales. British Journal of Entomology and Natural History, 22: 235-245.
Barbagallo, S. & Alcantara Santos, L. 1989. *Toxoptera odinae* (v. d. G.) (Homoptera: Aphididae) uma neva praga do cajveiro (*Anacardium occidentale*) em Moçambique. Phytophaga, 3: 163-169.
Barjadze, S., Karaca, İ., Yaşar, B. & Japoshvili, G. 2011. The yellow rose aphid *Rhodobium porosum*: a new pest of Damask rose in Turkey. Phytoparasitica, 39: 59-62.
Barjadze, S. & Özdemir, I. 2014. A new genus of Macrosiphini Wilson, 1910 (1887) (Hemiptera: Aphididae) from Rhododendron in Turkey. Zootaxa, 3835 (1): 121-126.
Barjadze, S., Özdemir, I. & Blackman, R. L. 2014. Two new species of Aphidini Latreille, 1802 (Hemiptera: Aphididae). Zootaxa, 3873 (2): 187-194.
Blackman R. L. & Eastop, V. F. 2018. Aphids on the World's Plants: An Online Identification and Information Guide. Available from: http://www.aphidsonworldsplants.info (Date of acess: 10th June).
Çanakçıoğlu, H. 1975. The Aphidoidea of Turkey. University of Istanbul Forestry Faculty Press, İstanbul, 309 pp.
Eser, S., Görür, G, Tepecik, İ. & Akyıldırım, H. 2009. Aphid (Hemiptera: Aphidoidea) species of the Urla district of İzmir region. Journal of Applied Bioogical Sciences, 3: 89-92.
Favret, C. 2018. Aphid Species File, Version 5.0/5.0. Available from: http://Aphid.SpeciesFile.org. (Date of access: 10th May 2018).
Görür, G., Işık, M, Akyürek, B. & Zeybekoğlu, Ü. 2009a. New records of Aphidoidea from Turkey. Journal of Entomological Research Society, 11 (3): 1-5.

Görür, G., Zeybekoğlu, Ü, Akyürek, B, Işık, M. & Akyıldırım, H. 2009b. Trabzon, Rize ve Artvin İllerinin Afit (Homoptera: Aphididae) Faunasının Belirlenmesi. Turkish Scientific Research Council Project, Project Number 107T450.

Görür, G., Akyıldırım, H, Akyürek, B. & Olcabey, G. 2011a. A contribution to the knowledge of the Turkish aphid (Hemiptera: Aphidoidea) fauna. EPPO (European and Mediterranean Plant Protection Organization) Bulletin, 41: 185-188.

Görür, G., Tepecik, İ, Akyıldırım, H. & Olcabey, G. 2011b. Additions to the Turkish aphid fauna (Hemiptera: Aphidoidea: Aphididae). North-Western Journal of Zoology, 7 (2): 318-321.

Görür, G., Akyıldırım, H, Olcabey, G. & Akyürek, B. 2012. The aphid fauna of Turkey: An updated checklist. Archives of Biological Sciences Belgrade, 64 (2): 675-692.

Görür, G., Senol, O., Geizici, G., Akyildirim Begen, H. & Parmaksiz, D. 2017. New aphid (Hemiptera:Aphidoidea) records from South Eastern Parts of Turkey. Journal of Insect Biodiversity and Systematics, 3 (3): 257-264.

Jörg, E. & Lampel, G. 1988. Xerothermophile Aphiden der Schweiz und angrezender Gebiete mit besonderer Berücksichtigung des Kantons Wallis. Mitteilungen der Schweizerischen Entomologischen Gesellschaft, 61: 43-88.

Jurc, M., Poljakovic-pajnik, L. & Jurc, D. 2009. The first record of *Cinara curvipes* (Patch, 1912) (Homoptera, Aphididae) in Slovenia and its possible economic impact. Zbornik Gozdarstva in Leasarstva, 88: 21-29.

Kadyrbekov, R. Kh. 2011. "Next addition to aphid fauna (Hemipteta, Aphididae) of Kazakhistan, 117-119". Materials of International Scientific Conference "Zoological investigations for 20 years of the independence of Kazakhstan Republic. (28 January, Almaty, Kazakhistan).

Martin, J. H. 1983. The identification of common aphid pests of tropical agriculture. Tropical Pest Management, 29: 395-411.

Martin, J. H. 1989. Identification, occurrence and pest status of *Toxoptera odinae* in Africa. Buletin of Entomological Research, 79: 607-611.

Martin, J. H. 2000. Two new british aphid introdcutions since 1999, in the contexte of other additions over the preceding thirty years (Sternorrhyncha: Aphidoidea). Entomologist's Gazette, 51: 97-105.

Naumann-Etienne, K. & Remaudiere, G. 1995. A commented preliminary checklist of the Aphids (Homoptera, Aphididae) of Pakistan and their host plants. Parasitica, 51: 1-61.

Nieto Nafria, J. M. 2018. Fauna Europaea. All European Animal species online. Available from: https://fauna-eu.org/. (Date of access: 20th July 2018).

Ortiz, M. J. P. 1982. Contribuciòn al conocimiento de los àfidos forestales del género *Cinara* Curtis en parte del eje neovolcànico (Distrito Federal, Mexico, Michoacàn). Boletin técnico Instituto Nacional de Investigaciones forestales, 78: 9-42.

Özdemir, I. & Barjadze, S. 2015. Some new records of aphid species (Hemiptera: Aphididae) from the Middle East and the Caucasus. Turkish Journal of Zoology, 39: 1-3.

Pashtshenko, N. F. 1988. "Suborder Aphidinea – aphids. In: Keys to the Identificationof Insects of the Soviet Far East (Edt: Ler, P. A.). Volume 2, Nauka, Leningrad, pp. 546-686.

Poljaković-Pajnik, L. & Petrović-Obradović, O. 2002. Bowlegged fir aphid *Cinara curvipes* (Patch) (Aphididae, Homoptera) new pest of *Abies concolor* in Serbia. Acta Entomologica Serbica, 7 (1/2): 147-150.

Remaudiere, G. & Remaudiere, M. 1997. Catalouge des Aphididae du Monde (Catalouge of the World's Aphididae) Homoptera Aphidoidea, INRA editions, Paris, 473 pp.

Remaudière, G., Toros, S. & Özdemir, I. 2006: New contribution to the aphid fauna of Turkey (Hemiptera, Aphidoidea). Revue française d'Entomologie, 28: 75-96.

Scheurer, S. & Binazzi, A. 2004. Notes on bio-ecology and ethology of *Cinara curvipes* (Patch), a newly introduced species into Europe (Aphididae Lachninae). Redia, 87: 61-65.

Stekolshchikov, A. V., Gavrilyuk, A. V. & Novgorodova, T. A. 2008. Additions to the aphid fauna of West Siberia (Homoptera: Aphidinea). Zoosystematica Rossica, 17: 57-59.

Şenol, Ö., Akyıldırım, H., Görür, G. & Demirtaş, E. 2014. New records for the aphid fauna (Hemiptera: Aphidoidea) of Turkey. Acta Zoologica Bulgarica, 66: 133-136.

Şenol, Ö., Akyıldırım Beğen, H., Görür, G. & Demirtaş, E. 2015a. New additions and invasive aphids for Turkey's aphidofauna (Hemiptera: Aphidoidea). Turkish Journal of Zoology, 39: 39-45.

Şenol, Ö., Akyıldırım Beğen, H., Görür, G. & Gezici, G. 2015b. Some new aphid records for Turkey aphidofauna (Hemiptera: Aphidoidae). Zoology in the Middle East, 61 (1): 90-92.

Şenol, Ö, Akyıldırım Beğen, H. & Görür, G. 2017. "Recent findings on aphid fauna from east and south eastern parts of Turkey". Biodicon, 10 (3): 76-78.

Tepecik, İ., Olcabey, G, Akyıldırım, H. & Görür, G. 2011. "Aphid species determined on plants in Karabük province and contribution to the Turkey aphid fauna, 195". IVth Turkey Plant Protection Congress (28-30 June, Kahramanmaraş, Turkey).

Toper Kaygın, A., Görür, G. & Çota, F. 2008. Contribution to the Aphid (Homoptera: Aphididae) species damaging on woody plants in Bartın, Türkiye. International Journal of Engineering Science, 2 (1): 83-86.

Toper Kaygın, A, Görür, G. & Çota, F. 2010. New records of aphid fauna in Turkey. Journal of Insect Science, 10 (5): 1-4.