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Taxonomic Documentation of Aphids (Hemiptera: Aphididae) Associated with Oilseed Crops in Andhra Pradesh and Tamil Nadu

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***Abstract*:** Comprehensive survey was undertaken during 2024–25 to document the aphid fauna associated with oilseed crop ecosystems in Tirupati and Chittoor districts of Andhra Pradesh, and Madurai and Virudhunagar districts of Tamil Nadu. The thirteen aphid species, namely *Aphis asclepiadis* (del Guercio), *Aphis craccivora* (Koch), *Aphis fabae* (Scopoli), *Aphis nasturtii* (Kaltenbach), *Acyrthosiphon rubi* (Narzikulov), *Brachycaudus amygdalinus* (Schouteden), *Brachycaudus helichrysi* (Kaltenbach), *Brachycaudus rumexicolens* (Patch), *Brevicoryne brassicae* (Linnaeus), *Lipaphis erysimi* (Kaltenbach), *Myzus dycei* (Carver), *Sitobion leelamaniae* (David) and *Uroleucon carthami* (Hille Ris Lambers) were recorded . Among these, *A. craccivora, A. fabae, A. nasturtii, A. rubi* and *M. dycei* with groundnut crop ecosystem, while *A. nasturtii* in sesame. The aphid species documented from sunflower crop ecosystems include *A. asclepiadis, B. amygdalinus, B. rumexicolens* and *B. helichrysi*, whereas *L. erysimi, B. brassicae* and *M. dycei* were recorded from mustard. *U. carthami* was exclusively associated with safflower. These findings provide baseline information on aphid diversity across major oilseed crop ecosystems of southern India, contributing to future ecological and pest management studies.

Keywords: Aphids, Groundnut, Sesame, Mustard, Sunflower, Safflower

Oilseed crops are cultivated worldwide for their edible oils, high protein content, and diverse industrial applications. They represent the second most important group of crops after cereals, occupying about 14-15% of the gross cropped area in India and contributing significantly to the agricultural GDP. India ranks as the fourth-largest oilseed-producing country, with a production of 39.67 million tonnes during 2023-24 (www.indiastat.com). Aphids (Hemiptera: Aphididae) form one of the most economically significant and taxonomically diverse groups of insect pests infesting oilseed crops. They are characterized by soft bodies, rapid parthenogenetic reproduction, and remarkable polymorphism contributing to their high adaptability and outbreak potential. In addition to causing direct damage by feeding on phloem sap, aphids also transmit viral diseases, compounding their impact on yield and oil quality reduction. More than 4700 aphid species have been described globally and of these over 190 have been reported to transmit more than one plant virus. The majority of the reported aphid vectors belong to the genera *Myzus*, *Aphis*, *Acyrthosiphon* and *Macrosiphum* of the subfamily Aphidinae (Kennedy et al., 1962). In oilseed ecosystems, several species of aphids to cause significant economic losses. *Aphis craccivora* Koch is a major pest of groundnut and sesame, while *Lipaphis erysimi* (Kaltenbach) severely infests mustard and other cruciferous crops. *Aphis gossypii* Glover, *Myzus persicae* (Sulzer), and *Brevicoryne brassicae* (Linnaeus) are also frequently associated with sunflower, safflower, and castor. These species not only reduce yield through direct sap feeding but also act as vectors of important viral diseases like groundnut rosette virus, cucumber mosaic virus, and turnip mosaic virus (Nault 1997, Hull 2002).

In aphid taxonomy, morphological characters such as body size and shape, antennal structure, number and distribution of rhinaria, rostral morphology, cauda and siphunculi structure, and caudal setae play a crucial role in species identification. Detailed examination of these features, supported by taxonomic keys and illustrated diagnostic plates, enables accurate and reliable identification of aphid species. Such precise identification is fundamental not only for understanding biodiversity and systematics but also for developing effective pest management strategies for aphid pests of major oilseeds and legumes crops.

MATERIAL AND METHODS

Surveys were conducted during 2024–2025 in oilseed crop ecosystems of Tirupati and Chittoor districts (Andhra Pradesh) and Madurai and Virudhunagar districts (Tamil Nadu) to collect aphid specimens. Infested plant parts with aphid colonies were placed in plastic containers (12 × 7 cm) or polyethylene bags, and in some cases aphids were also gently removed from plants using a camel hairbrush. Collected specimens were preserved in 70% ethanol in 2.5 ml vials, each labelled with collection details including locality, GPS coordinates, host plant, date, and collector.

Slides mounts were prepared following the procedure of Eastop and van Emden (1972). Preserved aphid specimens were initially boiled in 95% ethanol for 5–10 minutes and subsequently cleared in 10% KOH until the body became transparent. After rinsing with 95% ethanol, the specimens

were treated briefly with glacial acetic acid and then transferred to clove oil for complete clearing. Individual specimens were mounted in a drop of thin Canada balsam, oriented dorsally with appendages well spread. The slides were dried horizontally in an oven at 50 °C for 12 hours, with a water bath used during boiling to avoid direct heat damage. Each slide carried two labels: one with details of the host plant, locality, date, and collector, and the other specifying the scientific name and identifier.

RESULTS AND DISCUSSION

Total of thirteen aphid species belonging to eight genera recorded from oilseed crop ecosystems in Andhra Pradesh and Tamil Nadu were *Aphis asclepiadis* (del Guercio), *Aphis craccivora* (Koch), *Aphis fabae* (Scopoli), *Aphis nasturtii* (Kaltenbach), *Acyrthosiphon rubi* (Narzikulov), *Brachycaudus amygdalinus* (Schouteden), *Brachycaudus helichrysi* (Kaltenbach), *Brachycaudus rumexicolens* (Patch), *Brevicoryne brassicae* (Linnaeus), *Lipaphis erysimi* (Kaltenbach), *Myzus dycei* (Carver), *Sitobion leelamaniae* (David) and *Uroleucon carthami* (Hille Ris Lambers). Among these, *B. amygdalinus* was reported for the first time from India. Eight species *viz*., *A. asclepiadis*, *A. nasturtii*, *A. rubi*, *B. amygdalinus*, *B. helichrysi*, *B. rumexicolens*, *M. dycei* and *S. leelamaniae*, were reported for the first time from Andhra Pradesh, while three species *viz*., *A. asclepiadis*, *B. helichrysi* and *S. leelamaniae*, were recorded for the first time from Tamil Nadu. The list of aphid fauna associated with different host plants of oilseed crop ecosystems are presented in the Table 1 and the morphometric data of the recorded aphid species are presented in the Table 2.

***Aphis asclepiadis* (del Guercio):** The body is pale to dark green and measures about 1.4 times the length of the antenna. The antennae are pale with dusky apices. The ultimate rostral segment is narrow and wedge-shaped. The siphunculi are cylindrical, dark, and about 2.2 times longer than the cauda. The cauda is pale or slightly pigmented and tongue-shaped (Plate 1 A).

***Aphis craccivora* (Koch):** The body is approximately 1.6 times longer than the antenna. The abdomen is dorsally black, with pigmentation commonly extending laterally around the sclerites and siphuncular bases, the pigmentation appears fragmented in smaller individuals. Antennae reach about two-thirds of the body length, with segments I, II, and the apex of segment V darkened, while segments III, IV, and the basal part of segment V remain pale. The siphunculi are slightly swollen medially which are cylindrical and appears black in colour and about 1.9 times longer than the cauda. The cauda is pale, tongue-shaped, and bears 4-7 setae (Plate 1 B).

***Aphis fabae* (Scopoli):** Antennal pigmentation is confined to segments I and II, the apical half of segment VI, and the processus terminalis, while segments III, IV, and the basal half of segment V remain pale. The apical two-thirds of the femora are darkened, with similar dusky pigmentation present at the tibial apices and on the tarsi. The siphunculi measures about 1.6 times the length of the cauda, appears dark in colour and cylindrical, slightly swollen medially. The cauda is dark, concolourous with the siphunculi and varies from tongue-shaped to elongate (Plate 1 C).

***Aphis nasturtii* (Kaltenbach):** In apterous viviparous females of *Aphis nasturtii*, the body exhibits a bright pale green to yellowish-green hue and lacks any waxy covering. The body length is approximately 1.8 times longer than the antenna. The dorsal abdomen is translucent and pale, without sclerotized bands or pigmented sclerites. Legs are

Table 1. Aphid fauna associated with oilseed crop ecosystems

Crops	Aphid species recorded in Andhra Pradesh	Aphid species recorded in Tamil Nadu
Groundnut	*Aphis craccivora* (Koch)	*Aphis craccivora* (Koch)
	Aphis fabae (Koch)	*Aphis fabae* (Koch)
	Acyrthosiphon rubi (Kaltenbach)	*Acyrthosiphon rubi* (Kaltenbach)
	Aphis nasturtii (Kaltenbach)	
Sesame	*Aphis nasturtii* (Kaltenbach)	*Aphis nasturtii* (Kaltenbach)
Sunflower	*Aphis asclepiadis* (Fitch)	*Brachycaudus amygdalinus* (Schouteden)
	Brachycaudus amygdalinus (Schouteden)	*Brachycaudus rumexicolens* (Kaltenbach)
	Brachycaudus helichrysi (Patch)	
	Brachycaudus rumexicolens (Kaltenbach)	
Mustard	*Lipaphis erysimi* (Kaltenbach)	*Lipaphis erysimi* (Kaltenbach)
	Brevicoryne brassicae (Linnaeus)	*Myzus dycei* (Carver)
	Myzus dycei (Carver)	
Safflower	*Uroleucon carthami* (Hill Ris Lambers)	-

light to dusky, with the distal portions of the tibiae showing slightly darker pigmentation. The siphunculi are cylindrical, pale, and slightly reticulated at the apex, with faint darkening at the tips and measure about 1.2 times the length of the cauda. The cauda is bluntly conical and bears four to seven setae (Plate 1 D).

***Acyrthosiphon rubi* (Narzikulov):** The dorsal cuticle of the body is colourless and exhibits a wrinkled texture. The frons is distinctly emarginated, showing a faint median prominence, while the lateral prominences remain smooth. Antennae are six-segmented and exceed the body length, measuring approximately 1.3 times that of the body. The siphunculi are long, slender, and finely imbricated, each bearing a distinct flange. They measure about 0.35 times the body length and are approximately 1.6 times longer than the cauda, bearing 1-3 small hairs on one or both siphunculi. The cauda is elongate and subtriangular, and possess 7 to 9 setae. All dorsal, antennal, femoral, and basal tibial hairs are blunt, either spear-shaped or slightly knobbed. The eighth abdominal tergite bears 6-9 hairs (Plate 1 E).

***Brachycaudus amygdalinus* (Schouteden):** The antennae are six-segmented, with the body length measuring about 1.5 times that of the antenna. The ultimate rostral segment (R IV+V) bears four accessory hairs and measures approximately 0.8 times the length of the second hind tarsal segment (HT II). The siphunculi are pale with dusky apices, contrasting with those of *Brachycaudus schwartzi*, which are black and nearly three times longer than the cauda. The cauda is broadly rounded, with its length less than half of its basal width (Plate 1 F). By contrast in *Brachycaudus helichrysi*, the cauda is nearly equal in length and basal width.

***Brachycaudus helichrysi* (Kaltenbach):** The antennae are shorter than the body, which measures approximately 1.8 times the antennal length. The final antennal segment consists of a processus terminalis that is nearly twice as long as its basal portion. The rostrum is relatively short, reaching only up to the mid-coxae, its terminal segment is blunt and furnished with 2–3 accessory setae. The siphunculi are distinctly darker than the cauda, short, tapering, slightly swollen medially, and finely imbricated, with a clear subapical constriction. They are about 1.9 times longer than the cauda. The cauda itself is helmet-shaped, almost equal in length and basal width, and bears between 6 and 9 setae (Plate 1 G).

***Brachycaudus rumexicolens* (Patch):** The antennae are six segmented and measures approximately 0.45 times the length of the body, Body pigmentation is variable, however, the dorsal abdomen consistently shows extensive sclerotization, featuring a distinct dark cross-band on tergite V (occasionally extending across IV–V) and on tergites VI–VIII, often accompanied by smaller sclerites on the anterior tergites. Siphunculi measures 0.13 times the body length and 1.2 times the caudal length and it is very short and conical. They have a slightly constricted base, and a small terminal flange may be present. The cauda is short and broadly rounded, less than half as long as its basal width and generally bears seven setae (Plate 1 H).

***Brevicoryne brassicae* (Linnaeus):** Body length is 1.5 times the length of the antenna. Antennae are 6-segmented, with segment I imbricated, shorter than wide, segment II equal to segment I and the flagellum strongly imbricated. Apterous forms bear ciliated primary rhinaria. Rostrum reaching midcoxae with the ultimate rostral segment shorter

Table 2. Morphometric data of viviparous female aphid

Aphid species	Body length (mm)	Body width (mm)	Antennal length (mm)	Caudal length (mm)	Caudal width (mm)	Siphunculi length (mm)	Siphunculi width (mm)
A. asclepiadis	1.94	1.07	1.35	0.17	0.12	0.38	0.09
A. craccivora	3.45	2.28	2.11	0.39	0.11	0.76	0.08
A. fabae	3.00	1.73	2.68	0.31	0.24	0.52	0.13
A. nasturtii	3.94	2.51	2.11	0.27	0.25	0.33	0.13
A. rubi	2.82	1.54	3.73	0.63	0.29	1.01	0.16
B. amygdalinus	3.96	1.82	2.57	0.16	0.24	0.49	0.16
B. helichrysi	2.35	1.44	1.29	0.18	0.17	0.35	0.09
B. rumexicolens	5.29	2.61	2.43	0.59	0.53	0.68	0.17
B. brassicae	3.62	2.15	2.29	0.27	0.24	0.42	0.12
L. erysimi	5.39	2.59	2.05	0.24	0.35	0.44	0.18
M. dycei	2.40	1.48	1.82	0.48	0.20	1.35	0.23
S. leelamaniae	4.34	1.78	2.30	0.36	0.36	0.34	0.12
U. carthami	3.60	2.07	6.45	2.71	0.57	4.82	0.91

or slightly longer than second hind tarsal segment, bearing four secondary hairs. Siphunculi barrel-shaped, 0.2 times the body length and 1.6 times the length of the cauda. Cauda dark, triangular to elongate and bears 5–7 hairs. Legs smooth, hairs acute to sub-acute, faintly imbricated, tarsi are normally imbricated (Plate 1 I).

***Lipaphis erysimi* (Kaltenbach):** Body broadly oval measuring approximately 2.6 times the length of the antenna. Antennae are 6-segmented, generally dark except segments I, II, and basal half of segment III which are lighter in color. Flagellum imbricated, flagellar hairs minute. Rostrum reaching midcoxae, ultimate rostral segment aculminate, bearing two secondary hairs. Abdominal dorsum is pale. Cauda is medially constricted with a rounded apex rounded, bearing 5–6 hairs. Siphunculi are cylindrical, pale with dark apices, without flanges, and slightly tapering towards the tip and approximately 1.83 times longer than the cauda (Plate 1 J).

***Myzus dycei* (Carver):** Body length is 1.3 times that of the antenna. Cuticle is pale to light brown, sclerotized and corrugated, becoming coarsely spinulose posterior to the siphunculi. Antennae are six-segmented, without secondary rhinaria. Rostrum extends to the hind coxae, ultimate segment is longer than second hind tarsal segment, pale brown with a darker apex and bears 5–7 hairs. Legs are pale to light brown, concolourous with body while tarsi are darker. Siphunculi are stout, slightly expanded basally, gently curved, weakly clavate distally and narrowing apically, their surface shows small, flat imbrications with the apex displaying wo rows of transverse cells. Siphunculi are about 2.8 times longer than cauda. Cauda is triangular, slightly rounded with convex sides and a faint basal constriction, concolourous with body, bearing 5–6 distal hairs (Plate 1 K).

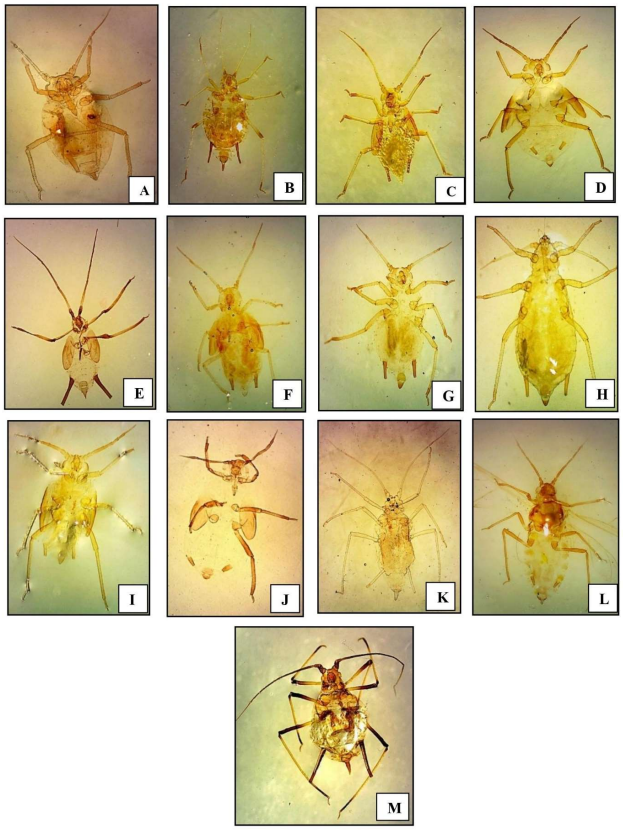

Plate 1. A. *Aphis asclepiadis*; B. *Aphis craccivora*; C.*Aphis fabae*; D. *Aphis nasturtii*; E. *Acyrthosiphon rubi*; F. *Brachycaudus amygdalinus*; G. *Brachycaudus helichrysi;* H. *Brachycaudus rumexicolens*; I. *Brevicoryne brassicae*; J. *Lipaphis erysimi*; K. *Myzus dycei*; L. *Sitobion leelamaniae*; M. *Uroleucon carthami*

***Sitobion leelamaniae* (David):** The body length is approximately 1.9 times that of the antenna. Antennae are six-segmented, with segment III imbricated and bearing few setae. The processus terminalis is 1.8 times the length of the base of the last antennal segment. The ultimate rostral segment is long, narrow, and acuminate, extending beyond the mid-coxae and bearing 2–3 accessory setae. Siphunculi are cylindrical, pale brown, gradually darkening toward the apex, with bases unconstructed. The cauda is tongue-shaped, pale in color, and bears several setae (Plate 1 L).

***Uroleucon carthami* (Hille Ris Lambers):** Adult apterae are spindle-shaped, coloration dark brown to blackish brown. Siphunculi and cauda are black. Antennae are predominantly black except extreme base of segment III and measure about 1.8 times longer than the body. Legs black except basal halves of femora. Rostrum reaches hind coxae with the ultimate rostral segment longer than second hind tarsal segment. Dorsal hairs on body are long, numerous, each anchored by dark sclerotized bases. Marginal tubercles on tergites II–IV very small or absent. Siphunculi are robust, tapering cylindrical structures, about 1.8 times longer than the cauda, with distinct reticulation distally. Cauda is slender, distinctly constricted, bearing 16–22 hairs and measuring approximately 0.75 times the length of the body (Plate 1 M).

Key for the encountered aphid species in the oilseed crop ecosystems during the present study

1. Spiracles of abdominal segments 1 & 2 are placed far apart; abdominal segments 1 & 7 usually possess lateral abdominal tubercles; secondary rhinaria completely absent in apterous forms; Antennal hairs very fine **(Tribe: Aphidini)** ……..…… **2**

-Spiracles of abdominal segments 1 & 2 are much closer; abdominal segments 1-7 are devoid of tubercules; secondary rhinaria are mostly present in apterous forms; antennal hairs usually coarse **(Tribe: Macrosiphini)** ……..…… **5**

2. Soft bodied aphids; body yellowish to greenish colour; Legs pale to dusky, with tibiae exhibiting slightly increased pigmentation towards their distal ends; cylindrical siphunculi with reticulate apex and longer than the cauda; cauda bluntly conical **(Plate 1 D)** ……. ***Aphis nasturtii***

- Soft bodied aphids; pigmentation varies from dark brown to black with or without shiny appearance…… ……..**3**

3. Cauda dark tongue shaped, elongate; siphunculi cylindrical dark & swollen; antennae shorter than body but processus terminalis long. Antennal segments I and II, the apical half of segment VI, processus terminalis exhibit dusky to dark pigmentation, whereas segments III, IV, and the basal half of segment V appear white **(Plate 1 C)**……..……..…***Aphis fabae***

- Cauda dark & tongue shaped; siphunculi cylindrical but not swollen……**4**

4. Cauda long, pale, tongue shaped with numerous setae; siphunculi cylindrical and dark; antennal segments I, II, and the apex of segment V dark whereas segments III, IV, and the basal portion of segment V remain pale **(Plate 1 B)** ……..***Aphis craccivora***

- Cauda tongue shaped with many long setae; siphunculi short and slightly tapering; antennae shorter than body length **(Plate 1 A)**…..……***Aphis asclepiadis***

5. Aphid with dark coloured body; prominent diverging lateral tubercules; primary rhinaria ciliated; siphunculi very darkly pigmented, subcylindrical, without flange; cauda very dark, tapering, with numerous setae; rostrum reaching hind coxae **(Plate 1 M)**……..***Urolecucon carthami***

- Aphid light to dark coloured body; lateral tubercules absent; primary rhinaria present but not ciliated; siphunculi may be pale or dark……..…. **6**

6. Siphunculi short or long, cylindrical to sub cylindrical but are always with a prominent apical flange; cauda may be tongue shaped or sub triangular……**7**

- Siphunculi may be short or long without prominent apical flange…… **11**

7. Siphunculi cylindrical, pale brown with apical darkening not basally constricted; cauda, pale, tongue shaped with minimal multiple setae **(Plate 1 L)** ……..….***Sitobion leelamaniae***

- With many variably shaped setae on cauda as well as on body…… **8**

8 Siphunculi long, slender, and imbricate, each featuring a distinct flange; Cauda elongate and subtriangular; all hairs on the dorsum, antennae, femora, and basal tibiae are blunt and either spear-shaped or slightly knobbed **(Plate 1 E)**……..***Acyrthosiphon rubi***

- Cauda with triangular or helmet shaped…… ……..... **9**

9 Cauda triangular with slightly rounded apex, convex lateral margins, concolorous with the body and with faint basal constriction; siphunculi moderately stout, slightly curved with weak distal clavation, finely imbricated, apically bearing two rows of transverse cells **(Plate 1 K)**…… ……***Myzus dycei***

- Cauda without basal constriction and not triangular ……..……**10**

10 Cauda helmet-shaped and approximately equal in length to its basal width; siphunculi short, tapering, with slight median swelling, finely imbricated, and a well-defined constriction below the apex; short rostrum and blunt ultimate rostral segment **(Plate 1 G)** …… …..***Brachycaudus helichrysi***

- Cauda not helmet shaped but broadly rounded or elongate, tongue shaped…….... **11**

11 Cauda broadly rounded…… ……..…. **12**

- Cauda triangular or helmet shaped…… ……**13**

12 Cauda broadly rounded with a length less than half its basal width; siphunculi pale with dusky tips and longer than the cauda **(Plate 1 F)**……..…***Brachycaudus amygdalinus***

- Cauda broadly rounded and less than half its basal width; siphunculi conical, and longer than the cauda **(Plate 1 H)**……...***Brachycaudus rumexicolens***

13. Barrel shaped siphunculi, longer than the cauda; cauda dark, triangular to elongate; antennae 6-segmented; segment I imbricated; segment II equal to segment I **(Plate 1 I)**……...***Brevicoryne brassicae***

- Siphunculi moderately long, narrow at base, cylindrical or slightly swollen distally, and with a preapical constriction below the flange; cauda broad at base, tongue-shaped to elongate triangular, often with a slight median constriction **(Plate 1 J)**…..……***Lipaphis erysimi***

The diversity and taxonomic characterization of aphids recorded in the present study are in agreement with several earlier reports documenting aphid–host associations across different agroecosystems. Stoetzel and Miller (2001) provided comprehensive information on taxonomic characters, usual hosts, and distribution of aphids within the United States. The observed species were *A. craccivora*, *A. fabae*, *A. gossypi*, *A. Maidiradicis*, *Hysteroneura setariae* (Thomas), *Macrosiphum euphorbiae* (Thomas), *Metopolophium dirhodium* (Walker), *M. persicae*, *R. Maidis*, *Rhopalosiphum padi* (Linnaeus), *Sipha flava* (Forbes),

Schizaphis graminum (Rondani), and *Sitobion avenae* (Fabricius) and also provided detailed pictorial and dichotomous keys for identification of each aphid species which served as a valuable reference framework for comparative diagnosis in the present study. Trivedi and Singh (2014) also highlighted that *A. craccivora* can be differentiated from other species by its distinct morphological traits. These include the presence of two hairs on the first segment of the hind tarsus; a blackish abdominal dorsum, generally fully sclerotized, with a pale region surrounding the siphunculi and a continuous dark median patch marked with polygonal reticulations; the eighth abdominal tergite bearing only two hairs; siphunculi that are blackish, cylindrical, and strongly imbricated; and a cauda that is elongate, apically pointed, and furnished with 5–7 hairs. These distinguishing features correspond well with the morphological observations made on *A. craccivora* populations associated with groundnut in the current investigation, reaffirming the reliability of these taxonomic traits. The occurrence of *Brevicoryne brassicae* and *Brachycaudus helichrysi* in the present study corroborates the findings of Ali (2014) who recorded five aphid species belonging to Subfamily Aphidinae: *Brevicoryne brassicae* (Linnaeus), *Brachycaudus helichrysi* (kaltenbach), *Lipaphis lepidii* (Nevsky), *Lipaphis pseudobrassicae* (Davis), *M. persicae* infesting cruciferous crops in Iraq.

Singh et al. (2015a) reported extensive aphid diversity on members of the family Asteraceae, identifying 207 plant species infested by 199 aphid species in India. Among the recorded aphid species, *A. gossypii* was recorded feeding on 77 food plants of Asteraceae followed by *B. helichrysi* feeding on 72 species, *A. spiraecola* feeding on 70 species, *M. persicae* feeding on 45 species, *M. ornatus* feeding on 35 species, *A. fabae* feeding on 25 species and *A. craccivora* feeding on 23 species. The present findings of *B. amygdalinus*, *B. helichrysi*, *B. rumexicolens* and *U. carthami* infesting on food plants of Asteraceae are consistent with their observations. Further, Singh et al. (2015b) highlighted *M. persicae* as a widespread pest occurring on 14 plant families, including Brassicaceae, Asteraceae, Fabaceae, and Solanaceae. The current findings of *B. brassicae*, *L. erysimi*, and *M. dycei* on Brassicaceae and *A. asclepiadis* and *B. rumexicolens* on Asteraceae reaffirm the broad host range patterns previously reported. Singh et al. (2016) identified 73 aphid species colonizing legumes in India, with *A. craccivora* being the dominant species, feeding on 83 legume species, followed by *A. gossypii* (39 species) and *Acyrthosiphon pisum* (20 species). In the present study, 13 species were reported from oilseed crop ecosystems, of which four aphid species, *A. craccivora*, *A. fabae*, *A. rubi*, and *A. nasturtii*, were identified as colonizing groundnut (a leguminous crop), is in strong conformity with these results, highlighting the prevalence of *A. craccivora* as a key pest in legume-based systems. Kumar et al (2023) documented 18 aphid species from 55 host plants across the Kumaun region of India. Their report of *A. asclepiadis* on *Helianthus annuus* and *A. nasturtii* on *Sesamum indicum* and *H. annuus* parallels the present findings from Andhra Pradesh and Tamil Nadu. The observation of *A. nasturtii* as a highly polyphagous species capable of colonizing both sesame and groundnut further supports its ecological plasticity and adaptability as noted in their work.

Twenty species of aphids infesting 29 plant species in the Terai region of West Bengal, of which *Brevicoryne brassicae*, *Myzus persicae*, *Lipaphis erysimi* (Kaltenbach), *Aphis gossypii*, and *Sitobion avenae* were identified as the predominant species (Maji et al., 2023). Comparable trends were observed in the current study, where *L. erysimi*, *B. brassicae*, and *M. dycei* were also found to be associated with members of the Brassicaceae, particularly within the mustard crop ecosystem demonstrating a consistent host–aphid relationship across regions. Kumar et al. (2024) reported peak populations of *L. erysimi* during the last week of December in mustard fields across different sowing dates; this seasonal pattern was also evident in the present study, confirming the temporal population dynamics of this species. Among the aphids studied in the present work, *A. nasturtii* was identified as polyphagous species, occurring in both the sesame and groundnut ecosystems. Its ability to colonize multiple hosts across different crop groups highlights its ecological adaptability and potential role as persistent pests. Such polyphagous behavior not only increases its survival potential opportunities but also enhances its significance as vectors of plant viruses, thereby posing greater risks to oilseed and legume production systems in Southern India.

CONCLUSION

The present investigation documented a diverse assemblage of aphid species associated with major oilseed crop systems in Andhra Pradesh and Tamil Nadu, highlighting their host specificity and seasonal abundance patterns. Species such as *Lipaphis erysimi*, *Brevicoryne brassicae*, and *Myzus dycei* exhibited a strong affinity to members of the Brassicaceae, while others like *Aphis gossypii* and *A. craccivora* showed wider host adaptability across different crop groups. The occurrence of polyphagous species such as *A. nasturtii* across sesame and groundnut ecosystems underscores their ecological plasticity and potential epidemiological importance as virus vectors. The findings provide a comprehensive taxonomic baseline for the

aphid fauna of oilseed crops in southern India and emphasize the need for continuous monitoring and integrated pest management strategies tailored to the regional agroecosystems.

REFERENCES

Ali HB 2014. *Pictorial Key to Aphid Species (Homoptera: Aphididae, Aphidinae) Infested Cruciferae in Several Provinces of Iraq*, pp 319. Cihan University, First International Scientific conference.

Eastop VF and Van Emden HF 1972. In: *Aphid Technology*. (Ed. H.F. van Emden). Academic Press, London and New York. The Insect material 1-45.

Hull R 2002. *Matthews' Plant Virology*. 4th Edn. Academic Press, San Diego, p 1001.

INDIASTAT 2024. *Selected State/Season-wise Area, Production and Yield of Total Oilseeds in India (2023-24).* https://www.indiastat.com/data/agriculture/total-oilseeds/data-year/2024.

Kennedy JS, Day MF and Eastop VF 1962. A conspectus of aphids as vectors of plant viruses. *CAB Review* **7**: 1-53.

Kumar R, Chandra S, Pervez, A and Sharma PK 2023. Diversity of Aphididae of Uttarakhand. *Annals of Science and Allied Research* **1**(1): 1-12.

Kumar A, Mishra MK, Pandey R, Singh AK, Singh BK and Singh SK 2024. Population dynamics of mustard aphid in relation to weather parameters and effect of predators on aphid population. *Indian Journal of Ecology* **51**(2): 397-400.

Maji A, Pal S, Gurung B, Chatterjee, M and Sahoo SK 2023. Diversity of aphids and their predatory coccinellids from West Bengal. *Indian Journal of Entomology* **85**(2): 332-336.

Nault LR 1997. Arthropod transmission of plant viruses: A new synthesis. *Annals of the Entomological Society of America* **90**(5): 521-541.

Singh R, Singh G, Tiwari AK, Patel S, Agrawal R, Sharma A and Singh BB 2015a. Diversity of host plants of aphids (Homoptera: Aphididae) infesting Asteraceae in India. *International Journal of Zoological Investigations* **1**(2): 137-167.

Singh R, Singh G, Tiwari AK, Sharma A, Patel S and Pratibha 2015b. *Myzus (Nectarosiphon) persicae* (Sulzer,1776) (Homoptera: Aphididae): updated check list of host plants in India. *International Journal of Zoological Investigations* **1**(1): 9-27.

Singh R, Singh G, Singh K and Sharma A 2016. Biodiversity of aphids (Insecta: Homoptera: Aphididae) infesting legumes (Angiospermae: Fabales: Fabaceae) in India. *International Journal of Research Studies in Zoology* **2**(1): 30-44.

Stoetzel MB and Miller GL 2001. Aerial feeding aphids of corn in the United States with reference to the root feeding *Aphis maidiradicis* (Homoptera: Aphididae). *Florida Entomologist* **84**(1): 83-98.

Trivedi M and Singh R 2014. Systematics and nymphal characteristics of black bean aphid, Aphis craccivora Koch (Homoptera: Aphididae). *International Journal of Life Sciences* **3**(1): 205-224.

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