



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2018; 6(2): 3157-3166

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Received: 12-01-2018

Accepted: 13-02-2018

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## Updated check-list of Lachninae, Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae (Aphididae: Hemiptera) and their food plants in India

**Garima Singh, Mahesh Prasad and Rajendra Singh**

### Abstract

The present check-list catalogued the food plant records of Indian aphids belonging to seven subfamilies Lachninae, Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae (Aphididae: Hemiptera). From India, total 41 species of Lachninae were recorded under 12 genera, of which more than half of the species are endemic. It is composed of 5 tribes: Eulachnini, Lachnini, Stomaphidini, Tramini, and Tuberlachnini. Tribe Eulachnini includes 21 species that feed on plant 23 species belonging to 7 families. The host plant association demonstrated that out of 21 species of Eulachnini, 14 are monophagous and mostly feeding on pinus and 4 are oligophagous (2-5 plant species). Lachnini includes 10 monophagous species that feed on 30 species of host plants belonging to 10 families. Two species: *Cinara (Cinara) chaetorostrata* Ghosh & Raychaudhuri and *Cinara (Cinara) pilicornis* (Hartig) were recorded only on snow. Tribe Stomaphidini is represented by only one species infesting plant of Juglandaceae while Tramini is represented by 2 species infesting mostly plants belonging to Asteraceae. Of 7 species of Tuberlachnini, most of them are monophagous or oligophagous feeding on Rosaceae. Remaining 6 subfamilies: Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae are least represented from India. Lizeriinae, Phyllaphidinae and Saltusaphidinae are each represented by only one monophagous species. Mindarinae, Taiwanaphidinae and Thelaxinae are represented by 2, 3 and 4 species of aphids, respectively. Among them, only one species of Thelaxinae feeds on the plants of 5 families.

**Keywords:** Lachninae, Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae, food plant record, aphids, check-list

### Introduction

Aphids (Aphididae: Hemiptera) are a group of small plant sap sucking insects, popularly known as plant-lice. The family Aphididae comprised 24 subfamilies that globally includes total 5079 species under 562 genera. In India, only 16 subfamilies were recognized comprising of 809 species under 208 genera (Table 1). Many of the aphid species are economically important being Agricultural and horticultural crop pests. In India, first aphid – food plant catalogue was prepared by Raychaudhuri <sup>[1]</sup> followed by Chakrabarti and Sarkar <sup>[2]</sup> who recorded additional records. Since then, there are several stray reports that records food plants of the Indian aphids. However, most of these records need a more closer and detail study as some plant species recorded as host for certain aphid species seems to be incorrect <sup>[3]</sup>. This paper is the last in series after publication of check-list of food plant catalogue of Indian aphids belonging to subfamilies Aiceoninae, Anoeciinae, Chaitophorinae and Drepanosiphinae <sup>[3]</sup>, Aphidinae <sup>[4-7]</sup>, Calaphidinae <sup>[8]</sup>, Eriosomatinae <sup>[9]</sup>, Greenideinae <sup>[10]</sup> and Hormaphidinae <sup>[11]</sup> based on the survey of literature. In the most of the literature published earlier, several errors crept in scientific names of the aphids and plants even in the recent ones. It happens because such contents become outdated quickly and, due to their perceived comprehensiveness, readers sometimes overlook newer sources of data <sup>[4]</sup>. Additionally, the researches on aphid taxonomy as well as their host plants is continued with the description of new taxa, the modified status of others, and the publication of other nomenclatural decisions. In spite of all the efforts, like other checklists, this checklist may not be entirely without any omission and errors.

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**Table 1:** Subfamilywise distribution of aphids recorded in India and abroad.

Subfamilies	World		India		
	Genera	Species	Genera	Species	
Aiceoninae	1	18	1	8	
Anoeciinae	2	29	1	6	
Chaitophorinae	12	177	5	29	
Drepanosiphinae	5	38	2	4	
Aphidinae	Aphidini	33	830	9	69
	Macrosiphini	242	2167	96	375
Baltichaitophorinae	2	2	0	0	
Calaphidinae	Calaphidini	17	77	5	14
	Panaphidini	46	282	20	34
Eriosomatinae	Eriosomatini	14	113	5	21
	Fordini	18	79	7	15
	Pemphigini	21	178	7	28
Greenideinae	Cervaphidini	6	20	3	7
	Greenideini	7	152	5	87
	Schoutedeniini	3	7	1	2
Hormaphidinae	Cerataphidini	10	113	9	34
	Hormaphidini	5	13	2	2
	Nipponaphidini	30	105	11	21
Israelaphidinae	1	5	0	0	
Lachninae	Eulachnini	4	294	2	21
	Lachnini	4	34	4	10
	Stomaphidini	1	34	1	1
	Tramini	3	33	2	2
	Tuberlachnini	5	15	3	7
Lizeriinae	5	47	1	1	
Macropodaphidinae	1	7	0	0	
Mindarinae	2	18	1	2	
Neophyllaphidinae	3	21	0	0	
Phloeomyzinae	5	5	0	0	
Phyllaphidinae	11	28	1	1	
Pterastheniinae	2	5	0	0	
Saltusaphidinae	13	60	1	1	
Spicaphidinae	3	13	0	0	
Taiwanaphidinae	1	14	1	3	
Tamaliinae	1	6	0	0	
Thelaxinae	5	19	2	4	
Unassignd subfamily	18	21	0	0	
Total	562	5079	208	809	

The present paper deals with the food plant records of Indian aphids belonging to 7 subfamilies Lachninae, Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae based on the survey of literature up to 31 March, 2018. In the present compilation, attempts were made to provide the valid scientific name of the plants following update taxonomic information provided by <http://www.ars-grin.gov> and <http://www.theplantlist.org>. At several places, their synonymy was also mentioned.

Lachninae was recognised as a distinct group of aphids bearing 9 or more ventral hairs on first tarsal segment and having long fine hairs on the body and appendages. It includes five tribes: Eulachnini Baker, 1920, Lachnini Herrich-Schaeffer, 1854; Stomaphidini Mordvilko, 1914, Tramini Herrich-Schaeffer, 1854, and Tuberlachnini Oestlund, 1942. Most of the Indian species are endemic. Raychaudhuri *et al.* <sup>[12]</sup> and Ghosh <sup>[13]</sup> have given earlier accounts of Indian Lachninae recording 36 species/subspecies. According to Favret <sup>[14]</sup>, world fauna of Lachninae consist of 410 species under 17 genera (Eulachnini: 4 genera, 294 species; Lachnini: 4 genera, 34 species; Stomaphidini: 1 genus, 34 species; Tramini: 3 genera, 33 species; and Tuberlachnini: 5 genera, 15 species). From India, total 41 species of Lachninae were recorded under 12 genera (Eulachnini: 2 genera, 21 species; Lachnini: 4 genera,

10 species; Stomaphidini: 1 genus, 1 species; Tramini: 2 genera, 2 species; and Tuberlachnini: 3 genera, 7 species). Total 41 species of Lachninae were recorded from India under 12 genera, of which more than half are endemic. Remaining 6 subfamilies: Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae are less known from India. Lizeriinae, Phyllaphidinae and Saltusaphidinae are each represented by only one monophagous species. Mindarinae, Taiwanaphidinae and Thelaxinae are represented by 2, 3 and 4 species of aphids, respectively. Among them, only one species of Thelaxinae feeds on plants of 5 families. Subfamilies Israelaphidinae, Macropodaphidinae, Phloeomyzinae, Neophyllaphidinae, Pterastheniinae, Spicaphidinae and Tamaliinae are yet to be reported from India.

#### Food Plant Associations

From India, total 41 species of Lachninae were recorded under 12 genera, of which more than half of the species are endemic. Tribe Eulachnini includes 21 aphid species that feed on 23 species of host plants belonging to 7 families. The host plant association demonstrated that out of 21 species of Eulachnini, 14 are monophagous and mostly feeding on pinus and 4 are oligophagous (2-5 plant species). Lachnini includes 10 monophagous species that feed on 30 species of host plants

belonging to 10 families. Two species: *Cinara (Cinara) chaetorostrata* Ghosh & Raychaudhuri and *Cinara (Cinara) pilicornis* (Hartig) were recorded only on snow. Tribes Stomaphidini is represented by only one species infesting plant of Juglandaceae while Tramini is represented by 2 species infesting mostly plants belonging to Asteraceae. Of 7 species of Tuberalachnini, most of them are monophagous or oligophagous feeding on Rosaceae.

The food plant association of Lizeriinae, Phyllaphidinae, Saltusaphidinae. Mindarinae and and Taiwanaphidinae are almost monophagous, only the aphids belonging to Thelaxinae feeds on plants of 5 families. m.i. = misidentified aphid species, indet. = unidentified plant species.

## I. Aphidwise Food Plant Catalogue

### A. Subfamily: Lachninae Herrich-Schaeffer, 1854

#### 1. Tribe: Eulachnini Baker, 1920 (= Cinarini Börner, 1930)

##### 1. *Cinara (Cinara) atrolbipes* David, Narayanan & Rajasingh, 1970 (1971)

=*Cinara atrolbipes* David, Narayanan & Rajasingh, 1970 (1971) <sup>[13]</sup>

=*Cinara (Lachniella) atrolbipes* David, Narayanan & Rajasingh, 1970 (1971) <sup>[13]</sup>

- *Pinus leboni* (Pinaceae) <sup>[15]</sup>
- *Pinus* sp. (Pinaceae) <sup>[13, 16]</sup>

##### 2. *Cinara (Cinara) atrotibialis* David & Rajasingh, 1968

=*Cinara atrotibialis* David & Rajasingh, 1968 <sup>[13]</sup>

=*Cinara (Cinarella) pineus* (Mordvilko, 1895) m.i. <sup>[17]</sup>

=*Cinara nr. schimitscheki* Börner, 1940 <sup>[18]</sup>

- *Araucaria* sp. (Araucariaceae) <sup>[19]</sup>
- *Picea smithiana* (Wall.) Boiss. (Pinaceae) <sup>[13]</sup>
- *Pinus kesiya* Royle ex Gordon (= *Pinus insularis* Endl, = *Pinus khasya* Hook.f. orth. var.) (Pinaceae) <sup>[15, 17, 20, 21]</sup>
- *Pinus khasyana* Griff. (= *Pinus khasiyanum* auct.) (Pinaceae) <sup>[12]</sup>
- *Pinus pinaster* Aiton (= *Pinus longifolia* Salisb.) (Pinaceae) <sup>[22]</sup>
- *Pinus* spp. (Pinaceae) <sup>[12, 19, 20, 23, 24, 25]</sup>

#### 3. *Cinara (Cinara) chaetorostrata* Ghosh & Raychaudhuri, 1981

=*Cinara chaetorostrata* Ghosh & Raychaudhuri, 1981 <sup>[13]</sup>

- On snow <sup>[26]</sup>
- Indet. <sup>[13]</sup>

#### 4. *Cinara (Cinara) comata* Doncaster, 1956

=*Cinara comata* Doncaster, 1956 <sup>[13]</sup>

=*Cinara (Lachniella) comata* Doncaster, 1956 <sup>[16, 27, 28]</sup>

- *Picea smithiana* (Wall.) Boiss. (Pinaceae) <sup>[13]</sup>
- *Pinus* sp. (Pinaceae) <sup>[16, 29, 30]</sup>

#### 5. *Cinara (Cinara) curvipes* (Patch, 1912)

- *Cedrus deodara* (Roxb. ex D. Don) G. Don (Pinaceae) <sup>[31]</sup>

#### 6. *Cinara (Cinara) eastopi* Pintera, 1966

=*Cinara eastopi* Pintera, 1966 <sup>[13]</sup>

- *Pinus wallichiana* A.B. Jacks (= *Pinus excelsa* Wall. ex D. Don) (Pinaceae) <sup>[13]</sup>

#### 7. *Cinara (Cinara) hottesis* (Ghosh, Basu & Raychaudhuri, 1969)

=*Indocinara hottesis* Ghosh, Basu & Raychaudhuri, 1969 <sup>[13]</sup>

- *Isodon coesta* (Buch.-Ham. ex D. Don) (= *Plectranthus japonicas* Koidz.) (Lamiaceae) <sup>[13, 32, 33]</sup>
- *Isodon* sp. (= *Plectranthus* sp.) (Lamiaceae) <sup>[16]</sup>

#### 8. *Cinara (Cinara) indica* Verma, 1970

=*Cinara indica* Verma, 1970 <sup>[13]</sup>

=*Cinara ? abieticola* <sup>[18]</sup>

- *Cedrus deodara* (Roxb. ex D. Don) G. Don (Pinaceae) <sup>[13, 34]</sup>

#### 9. *Cinara (Cinara) lachnirostris* Hille Ris Lambers, 1966

=*Cinara lachnirostris* Hille Ris Lambers, 1966 <sup>[13]</sup>

- *Pinus roxburghii* Sargent (= *Pinus longifolia* (Roxb. non Salisb.) (Pinaceae) <sup>[35]</sup>
- *Pinus wallichiana* A.B. Jacks. (Pinaceae) <sup>[13, 36, 37]</sup>
- *Pinus* sp. (Pinaceae) <sup>[35]</sup>

#### 10. *Cinara (Cinara) maculipes* Hille Ris Lambers, 1966

=*Cinara maculipes* Hille Ris Lambers, 1966 <sup>[13]</sup>

- *Pinus patula* Schiede ex Schldt. & Cham. (Pinaceae) <sup>[13, 16, 30]</sup>
- *Pinus wallichiana* A.B. Jacks. (Pinaceae) <sup>[13, 16, 31, 38, 39, 40]</sup>
- *Pinus* sp. (Pinaceae) <sup>[13, 42]</sup>

#### 11. *Cinara (Cinara) pilicornis* (Hartig, 1841)

=*Cinara pilicornis* (Hartig, 1841) <sup>[13]</sup>

=*Cinara nr. piceicola* (Cholodkovsky, 1896) <sup>[18]</sup>

- On snow <sup>[13]</sup>

#### 12. *Cinara (Cinara) pinea* (Mordvilko, 1895)

= *Cinara (Cinarella) pinea* (Mordvilko, 1895) <sup>[27]</sup>

- *Pinus kesiya* Royle ex Gordon (Pinaceae) <sup>[43]</sup>

#### 13. *Cinara (Cinara) similis* (van der Goot, 1917)

=*Cinara similis* (van der Goot, 1917) <sup>[13]</sup>

=*Lachnus similis* van der Goot, 1917 <sup>[16, 27]</sup>

- *Dalbergia sissoo* Roxb. ex DC. (Fabaceae) <sup>[16, 22]</sup>

#### 14. *Cinara (Cinara) tenuipes* Chakrabarti & Ghosh, 1974

=*Cinara abieticola tenuipes* Chakrabarti & Ghosh, 1974 <sup>[44]</sup>

=*Cinara confinis tenuipes* (Chakrabarti & Ghosh, 1974) <sup>[13]</sup>

- *Abies pindrow* (Royle) Brandis (Pinaceae) <sup>[13]</sup>
- *Abies* sp. (Pinaceae) <sup>[16, 38, 44]</sup>
- *Cedrus deodara* (Roxb. ex D. Don) G. Don (Pinaceae) <sup>[42]</sup>
- *Juniperus communis* L. (Cupressaceae (=Coniferae)) <sup>[22]</sup>
- *Picea smithiana* (Wall.) Boiss. (= *Abies morinda* Link) (Pinaceae) <sup>[42]</sup>
- *Pinus* sp. (Pinaceae) <sup>[45, 46, 47]</sup>

#### 15. *Cinara (Cinara) tistaensis* Agarwala & Raychaudhuri, 1982

- *Abies* sp. (Pinaceae) <sup>[48]</sup>

#### 16. *Cinara (Cupressobium) cupressi* (Buckton, 1881)

- *Juniperus recurva* Buch.-Ham. Ex D. Don (Cupressaceae (=Coniferae)) <sup>[48]</sup>

#### 17. *Cinara (Cupressobium) tujafilina* (del Guercio, 1909)

=*Cinara tujafilina* (del Guercio, 1909) <sup>[13]</sup>

- *Austrocedrus chilensis* (D. Don) Pic. Serm. & Bizzarri (= *Thuja chilensis* D. Don) (Cupressaceae) <sup>[49]</sup>
- *Cupressus* sp. (Cupressaceae) <sup>[19, 50, 51, 52]</sup>
- *Platycladus orientalis* (L.) Franco (= *Thuja orientalis* L.) (Cupressaceae) <sup>[22, 53]</sup>

- *Thuja* sp. (Cupressaceae) [22]

**18. *Cinara (Schizolachnus) orientalis* (Takahashi, 1924)**

=*Cinara orientalis* (Takahashi, 1924) [13]

- *Pinus kesiya* Royle ex Gordon (Pinaceae) [13, 54]

**19. *Cinara* sp.**

=*Cinara (Lachniella)* sp. [55]

- *Abies pindrow* (Royle) Brandis (Pinaceae) [37]
- *Abies* sp. (Pinaceae) [19]
- *Isodon coesta* (Buch.-Ham. ex D. Don) (Lamiaceae (=Labiatae)) [16, 56]
- *Picea smithiana* (Wall.) Boiss. (=Picea morinda Link) (Pinaceae) [16, 55, 57]
- *Pinus* sp. (Pinaceae) [16, 58]

**20. *Eulachnus cembrae* Börner, 1950**

- *Pinus* sp. (Pinaceae) [59]

**21. *Eulachnus pumilae* Inouye, 1939**

- *Pinus* sp. (Pinaceae) [13]

**22. *Eulachnus thunbergii* (Wilson, 1919)**

=*Eulachnus ? rileyi* (Williams, 1911), m.i. [60]

- *Pinus* sp. (Pinaceae) [60]
- *Pinus kesiya* Royle ex Gordon (Pinaceae) [13, 15, 20, 61, 62]
- *Pinus khasyana* Griff. (Pinaceae) [63]
- *Pinus patula* Schiede ex Schltdl. & Cham. (Pinaceae) [15, 12]
- *Pinus* sp. (Pinaceae) [12, 15, 23, 59]
- *Quercus dealbata* Hook.f. & Thoms.ex Miq. (Fagaceae) [15, 12]
- *Rhododendron* sp. (Ericaceae) [15, 12]

**2. Tribe: Lachnini Herrich-Schaeffer, 1854**

**23. *Lachnus acutihirsutus* Kumar & Burkhardt, 1970**

- *Quercus indica* drake (=Castaneopsis indica A. DC) (Fagaceae) [64]
- *Quercus leucotrichophora* A. Camus (=Quercus incana Roxb.) (Fagaceae) [16, 42, 64, 65]
- *Quercus* sp. (Fagaceae) [13, 66]

**24. *Lachnus longirostrum* David & Ghosh, 1982**

- *Populus ciliata* Wall. ex Royle (Salicaceae) [42]
- *Salix babylonica* L. (Salicaceae) [40, 42, 67]
- *Salix fragilis* L. (Salicaceae) [13]
- *Salix tetrasperma* Roxb. (Salicaceae) [40, 68]
- *Salix* sp. (Salicaceae) [42]

**25. *Lachnus longisetosum* Ghosh, 1982**

=*Lachnus longisetosus* Ghosh, 1982 [69]

- Indet. [69]

**26. *Lachnus quercihabitans* (Takahashi, 1924)**

- *Quercus* sp. (Fagaceae) [15, 70]

**27. *Lachnus salicis* Chakrabarti & Raha, 1988**

- *Salix babylonica* L. (Salicaceae) [40]
- *Salix tetrasperma* Roxb. (Salicaceae) [40]

**28. *Lachnus tropicalis* (van der Goot, 1916)**

=*Lachnus ? tropicalis* (van der Goot, 1916) [27]

- *Castanopsis* sp. (Fagaceae) [13]
- *Chrysanthemum* sp. [71]

- *Lithocarpus dealbata* (Hook.f. & Thoms. Ex Bl.) Rehd. (Fagaceae) [13, 31, 63]

- *Lithocarpus elegans* (Blume) Hatus. Ex Soep. (Fagaceae) [13]

- *Litsea glutinosa* (Lour.) C.B. Rob. (=Litsea sebifera Pers.) (Lauraceae) [20, 51, 52]

- *Malus domestica* Borkh. (=Pyrus malus L.) (Rosaceae) [72]

- *Pinus* sp. (Pinaceae) [20]

- *Pinus wallichiana* A.B. Jacks. (Pinaceae) [35, 36, 37]

- *Pyrus communis* L. (Rosaceae) [12, 15]

- *Quercus floribunda* Lindl. ex A. Campus (=Quercus dealbata Royle) (Fagaceae) [31, 15, 12]

- *Quercus phillyraeoides* A. Gray (Fagaceae) [13]

- *Quercus* sp. (Fagaceae) [19, 23, 24, 25, 73]

**29. *Lachnus* sp.**

- *Heteropanax fragrans* (D. Don) Seem (Araliaceae) [43]

- *Musa paradisiaca* L. (Musaceae) [43, 74]

- *Platyclusus orientalis* (L.) Franco (Cupressaceae) [37]

- *Pyrus khasiana* Hooker.f. (Rosaceae) [43]

**30. *Longistigma ? liquidambarus* (Takahashi, 1925)**

- *Berchemia floribunda* (Wall.) Brougn. (Rhamnaceae) [13, 75]

**31. *Maculolachnus rubi* Ghosh & Raychaudhuri, 1972**

- *Rubus* sp. (Rosaceae) [12, 13, 15, 76]

**32. *Maculolachnus submacula* (Walker, 1848)**

- *Rosa moschata* Herrm. (Rosaceae) [13]

- *Rosa* sp. (Rosaceae) [16, 39]

**33. *Pterochloroides persicae* (Cholodkovsky, 1899)**

=*Pterochlorus (Lachnus) persicae* (Cholodkovsky, 1899) [27, 77, 78, 79]

- *Prunus armeniaca* L. (Rosaceae) [13, 27, 77, 78]

- *Prunus domestica* L. (Rosaceae) [27, 77, 78]

- *Prunus dulcis* (Mill.) D.A. Webb. (=Prunus communis (L.) Arcang, =Prunus amygdalus Batsch) (Rosaceae) [13, 27]

- *Prunus persica* (L.) Batsch (Rosaceae) [13, 27, 77, 78]

- *Prunus* sp. (Rosaceae) [27]

**3. Tribe: Stomaphidini Mordvilko, 1914**

**34. *Stomaphis (Stomaphis) mordvilko* Hille Ris Lambers, 1933**

- *Juglans regia* L. (Juglandaceae) [80]

- *Juglans* sp. (Juglandaceae) [13]

**35. *Stomaphis* sp.**

- *Cedrus deodara* (Roxb. ex D. Don) G. Don (Pinaceae) [72]

**4. Tribe: Tramini Herrich-Schaeffer, 1854**

**36. *Protrama longitarsus sclerodensus* Kumar, 1973**

=*Protrama salviae* rishi & Bhagat, 1981 [13]

- *Artemisia* sp. (Asteraceae) [13, 16, 81, 75]

- *Artemisia vestita* Wall (Asteraceae) [82]

- *Cnicus* sp. (Asteraceae) [42]

- *Cynoglossum denticulatum* DC. (Boraginaceae) [13, 16]

- *Erigeron bonariensis* L. (=Conyza bonariensis (L.) Cronq.) (Asteraceae) [83]

- *Erigeron canadensis* L. (=Conyza canadensis (L.)

- Cronq.) (Asteraceae) [13, 16]
- *Helianthus* sp. (Asteraceae) [84]
- *Lactuca dolichophylla* Kitam. (= *Lactuca longifolia* DC.) (Asteraceae) [42, 81]
- *Mazus surculosus* D. Don (Phrymaceae) [42]
- *Myriactis nepalensis* Less. (= *Myriactis wallichii* Less.) (Asteraceae) [13, 16, 40]
- *Rumex* sp. (Polygonaceae) [13, 16]
- *Salvia moorerofitiana* Benth. (Lamiaceae) [13, 85]
- *Sonchus asper* (L.) Hill (Asteraceae) [42]

### 37. *Protrama* sp.

- *Helianthus* sp. (Asteraceae) [86]

### 38. *Trama (Neotrama) penecaeca* (Stroyan, 1964)

= *Protrama penecaeca* Stroyan, 1964 [13]

- *Helianthus tuberosus* L. (Asteraceae) [13, 87, 88, 89, 90]

### 5. Tribe: Tuberolachnini Oestlund, 1942

### 39. *Nippolachnus bengalensis* Basu & Hille Ris Lambers, 1968

- *Eriobotrya dubia* Dcne. (Rosaceae) [12, 13, 15, 64]
- *Photinia arguta* L. (Rosaceae) [13, 64]
- *Pinus khasyana* Griff. (Pinaceae) [15]
- *Prunus persica* (L.) Batsch (Rosaceae) [19]
- *Pyrus communis* L. (Rosaceae) [15, 19]
- *Pyrus pashia* Buch.-Ham. ex D. Don (Rosaceae) [13, 64, 91]
- *Quercus* sp. (Fagaceae) [72, 64]

### 40. *Nippolachnus himalayensis* (van der Goot, 1917)

= *Lachnus himalayensis* van der Goot, 1917 [27]

= *Nippolachnus eriobotryae* Basu & Hille Ris Lambers, 1968 [92]

- *Eriobotrya petiolata* Hook.f. (Rosaceae) [12, 13, 64]
- *Quercus* sp. (Fagaceae) [64, 72]

### 41. *Nippolachnus piri* Matsumura, 1917

- *Pinus khasyana* Griff. (Pinaceae) [15, 17, 64]
- *Pinus* sp. (Pinaceae) [15]
- *Prunus dulcis* (Mill.) D.A. Webb. (= *Prunus communis* (L.) Arcang.) (Rosaceae) [25, 93]
- *Prunus persica* (L.) Batsch (Rosaceae) [24, 64]
- *Prunus* sp. (Rosaceae) [20]
- *Pyrus communis* L. (Rosaceae) [12, 13, 15, 19, 23, 24, 51]
- *Pyrus khasiana* Hooker.f. (Rosaceae) [13, 64]
- *Pyrus* sp. (Rosaceae) [12]
- *Quercus* sp. (Fagaceae) [64, 72]

### 42. *Nippolachnus* sp.

- Indet. [94]

### 43. *Pyrolachnus imbricatus* (David, Narayanan & Rajasingh, 1971)

- *Prunus cornuta* (Wall. ex Royle) Steud. (Rosaceae) [13, 16, 28, 77]
- *Prunus* sp. (Rosaceae) [95, 96]
- *Setaria* sp. (Poaceae) [16]
- *Triticum aestivum* ssp. *aestivum* L. (= *Triticum vulgare* Vill.) (Poaceae) [16]

### 44. *Pyrolachnus pyri* (Buckton, 1899)

= *Dilachnus krishni* George, 1927 [13]

= *Lachnus krishni* (George, 1927) [27, 97]

- *Pyrus communis* L. (Rosaceae) [13, 27, 43, 77, 91, 93]
- *Pyrus* sp. (Rosaceae) [12, 27]

### 45. *Tuberolachnus (Tuberolachniella) scleratus* Hille Ris Lambers & Basu, 1966

- *Eriobotrya dubia* Dcne. (Rosaceae) [12, 13]
- *Eriobotrya petiolata* Hook.f. (Rosaceae) [13]
- *Eriobotrya petiolata* Hook.f. (= *Eriobotrya peltata* auct. nonn.) (Rosaceae) [12]

### 46. *Tuberolachnus (Tuberolachnus) salignus* (Gmelin, 1790)

= *Tuberolachnus saligna* (Gmelin, 1790) [17]

- *Salix babylonica* L. (Salicaceae) [12, 13, 15, 17, 43, 66]
- *Salix tetrasperma* Roxb. (Salicaceae) [27, 77, 53]
- *Salix* sp. (Salicaceae) [13, 15, 16, 38, 77]

### B. Subfamily: Lizeriinae Blanchard, 1923

#### 1. *Paoliella (Paoliella) nirmalae* (David, 1969)

= *Paoliella nirmalae* David, 1969 [13]

= *Unipterus (Paoliella) nirmalae* David, 1969 [98]

- *Terminalia arjuna* (Roxb.) ex DC. Wight & Arn. (Combretaceae) [49, 98, 99, 100]

### C. Subfamily: Mindarinae Blanchard, 1923

#### 1. *Mindarus abietinus* Koch, 1857

- *Abies* sp. (Pinaceae) [42]
- *Cedrus deodara* (Roxb. ex D. Don) G. Don (Pinaceae) [42]

#### 2. *Mindarus japonicus* Takahashi, 1931

- *Abies pindrow* (Royle) Brandis (Pinaceae) [35, 36, 101]
- *Picea smithiana* (Wall.) Boiss. (Pinaceae) [42]

### D. Subfamily: Phyllaphidinae Herrich-Schaeffer, 1857

#### 1. *Machilaphis machili* (Takahashi, 1928)

- *Machilus odoratissima* Nees (Lauraceae) [92, 99, 100]
- *Persea odoratissima* Kosterm (Lauraceae) [12, 15, 20, 102, 103]

### E. Subfamily: Saltusaphidinae Baker, 1920

#### 1. *Saltusaphis scirpus* Theobald, 1915

= *Saltusaphis africana* Eastop, 1953, m.i. [99]

- *Cyperus iria* L. (Cyperaceae) [104]
- *Cyperus* sp. (Cyperaceae) [99, 105]

### F. Subfamily: Taiwanaphidinae Quednau & Remaudière, 1994

#### 1. *Taiwanaphis (Taiwanaphis) dineni* Mandal, Agarwala & Raychaudhuri, 1979

- Indet. Combretaceae [19, 106]

#### 2. *Taiwanaphis (Taiwanaphis) kalipadi* (Raychaudhuri & Ghosh, 1964)

= *Paracallipterus kalipadi* Raychaudhuri & Ghosh, 1964 [100]

- *Annona squamosa* L. (Annonaceae) [12, 99, 102, 107]

#### 3. *Taiwanaphis (Taiwanaphis) randiae* Ghosh, Basu & Raychaudhuri, 1971

- *Randia* sp. (Rubiaceae) [12, 15, 102, 103]

### G. Subfamily: Thelaxinae Baker, 1920

#### 1. *Kurisakia indica* Basu, 1967

- *Bambusa* sp. (Poaceae) [24]
- *Engelhardtia* sp. (Juglandaceae) [15]
- *Engelhardtia spicata* Lesch. ex Blume (Juglandaceae) [12,

- *Ficus* sp. (Moraceae) [24]
- *Helianthus* sp. (Asteraceae) [19]
- *Litsea monopetala* (Roxb.) Pers. (= *Litsea polyantha* Juss.) (Lauraceae) [19, 23, 25]
- *Litsea* sp. (Lauraceae) [19, 24]
- *Pterocarya* sp. (Juglandaceae) [19]

## 2. *Kurisakia onigurumii* (Shinji, 1923)

= *Glyphina onigurumii* (Shinji, 1923) [73]

- Indet. [73, 109]

## 3. *Neothelaxes parthenocissi* Chakarabarti & Quednau, 1996

- *Parthenocissus semicordata* (Wall.) Planch. (Vitaceae) [110]

## 4. *Neothelaxes viticola* Chakrabarti & Quednau, 1996

- *Parthenocissus semicordata* (Wall.) Planch. (Vitaceae) [110, 111]

## II. Plantwise Foodplant Catalogue

1. *Abies pindrow* (Pinaceae): *Cinara* (*Cinara*) *tenuipes*, *Cinara* sp, *Mindarus abietinus*, *Mindarus japonicus*
2. *Abies* sp. (Pinaceae): *Cinara* (*Cinara*) *tenuipes*, *Cinara* (*Cinara*) *tistaensi*, *Cinara* sp, *Mindarus abietinus*
3. *Annona squamosa* (Annonaceae): *Taiwanaphis* (*Taiwanaphis*) *kalipadi*
4. *Araucaria* sp. (Araucariaceae): *Cinara* (*Cinara*) *atrotibialis*
5. *Artemisia* sp. (Asteraceae): *Protrama longitarsus sclerodensus*
6. *Artemisia vestita* (Asteraceae): *Protrama longitarsus sclerodensus*
7. *Austrocedrus chilensis* (Cupressaceae): *Cinara* (*Cupressobium*) *tujafilina*
8. *Bambusa* sp. (Poaceae): *Kurisakia indica*
9. *Berchemia floribunda* (Rhamnaceae): *Longistigma* ? *liquidambarus*
10. *Castanopsis* sp. (Fagaceae): *Lachnus tropicalis*
11. *Cedrus deodara* (Pinaceae): *Cinara* (*Cinara*) *curvipes*, *Cinara* (*Cinara*) *indic*, *Cinara* (*Cinara*) *tenuipes*, *Mindarus abietinus*, *Stomaphis* sp.
12. *Chrysanthemum* sp. (Asteraceae): *Lachnus tropicalis*
13. *Cnicus* sp. (Asteraceae): *Protrama longitarsus sclerodensus*
14. *Cupressus* sp. (Cupressaceae): *Cinara* (*Cupressobium*) *tujafilina*
15. *Cynoglossum denticulatum* (Boraginaceae): *Protrama longitarsus sclerodensus*
16. *Cyperus iria* (Cyperaceae): *Saltusaphis scirpus*
17. *Cyperus* sp. (Cyperaceae): *Saltusaphis scirpus*
18. *Dalbergia sissoo* (Fabaceae): *Cinara* (*Cinara*) *similis*
19. *Engelhardtia* sp. (Juglandaceae): *Kurisakia indica*
20. *Engelhardtia spicata* (Juglandaceae): *Kurisakia indica*
21. *Erigeron bonariensis* (Asteraceae): *Protrama longitarsus sclerodensus*
22. *Erigeron canadensis* (Asteraceae): *Protrama longitarsus sclerodensus*
23. *Eriobotrya dubia* (Rosaceae): *Nippolachnus bengalensis*, *Tuberolachnus* (*Tuberolachniella*) *scleratus*
24. *Eriobotrya petiolata* (Rosaceae): *Nippolachnus himalayensis*, *Tuberolachnus* (*Tuberolachniella*) *scleratus*
25. *Ficus* sp. (Moraceae): *Kurisakia indica*
26. *Helianthus* sp. (Asteraceae): *Kurisakia indica*, *Protrama longitarsus sclerodensus*, *Protrama* sp.
27. *Helianthus tuberosus* (Asteraceae): *Trama* (*Neotrama*) *penecaeca*
28. *Heteropanax fragrans* (Araliaceae): *Lachnus* sp.
29. *Isodon coesta* (Lamiaceae): *Cinara* (*Cinara*) *hottesii*, *Cinara* sp.
30. *Isodon* sp. (Lamiaceae): *Cinara* (*Cinara*) *hottesii*
31. *Juglans regia* (Juglandaceae): *Stomaphis* (*Stomaphis*) *mordvilkoii*
32. *Juglans* sp. (Juglandaceae): *Stomaphis* (*Stomaphis*) *mordvilkoii*
33. *Juniperus communis* (Cupressaceae): *Cinara* (*Cinara*) *tenuipes*
34. *Juniperus recurva* (Cupressaceae): *Cinara* (*Cupressobium*) *cupressi*
35. *Lactuca dolichophylla* (Asteraceae): *Protrama longitarsus sclerodensus*
36. *Lithocarpus dealbata* (Fagaceae): *Lachnus tropicalis*
37. *Lithocarpus elegans* (Fagaceae): *Lachnus tropicalis*
38. *Litsea glutinosa* (Lauraceae): *Lachnus tropicalis*
39. *Litsea monopetala* (Lauraceae): *Kurisakia indica*
40. *Litsea* sp. (Lauraceae): *Kurisakia indica*
41. *Machilus odoratissima* (Lauraceae): *Machilaphis machili*
42. *Malus domestica* (Rosaceae): *Lachnus tropicalis*
43. *Mazus surculosus* (Phrymaceae): *Protrama longitarsus sclerodensus*
44. *Musa paradisiaca* (Musaceae): *Lachnus* sp.
45. *Myriactis nepalensis* (Asteraceae): *Protrama longitarsus sclerodensus*
46. *Parthenocissus semicordata* (Vitaceae): *Neothelaxes parthenocissi*, *Neothelaxes viticola*
47. *Persea odoratissima* (Lauraceae): *Machilaphis machili*
48. *Photinia arguta* (Rosaceae): *Nippolachnus bengalensis*
49. *Picea smithiana* (Pinaceae): *Cinara* (*Cinara*) *tenuipes*, *Cinara* sp, *Cinara* (*Cinara*) *atrotibialis*, *Cinara* (*Cinara*) *comata*, *Mindarus abietinus*, *Mindarus japonicus*
50. *Pinus kesiya* (Pinaceae): *Cinara* (*Cinara*) *atrotibialis*, *Cinara* (*Cinara*) *pinica*, *Cinara* (*Schizolachnus*) *orientalis*, *Eulachnus thunbergii*
51. *Pinus khasyana* (Pinaceae): *Cinara* (*Cinara*) *atrotibialis*, *Eulachnus thunbergii*, *Nippolachnus bengalensis*, *Nippolachnus piri*
52. *Pinus leboni* (Pinaceae): *Cinara* (*Cinara*) *atroalbipes*
53. *Pinus patula* (Pinaceae): *Cinara* (*Cinara*) *maculipes*, *Eulachnus thunbergii*
54. *Pinus pinaster* (Pinaceae): *Cinara* (*Cinara*) *atrotibialis*
55. *Pinus roxburghii* (Pinaceae): *Cinara* (*Cinara*) *lachnirostris*
56. *Pinus* sp. (Pinaceae): *Cinara* (*Cinara*) *atroalbipes*, *Cinara* (*Cinara*) *comata*, *Cinara* (*Cinara*) *lachnirostris*, *Cinara* (*Cinara*) *maculipes*, *Cinara* (*Cinara*) *tenuipes*, *Cinara* sp, *Eulachnus cembrae*, *Eulachnus pumilae*, *Eulachnus thunbergii*, *Lachnus tropicalis*, *Nippolachnus piri*, *Cinara* (*Cinara*) *atrotibialis*
57. *Pinus wallichiana* (Pinaceae): *Cinara* (*Cinara*) *eastopi*, *Cinara* (*Cinara*) *lachnirostris*, *Cinara* (*Cinara*) *maculipes*, *Lachnus tropicalis*
58. *Platykladus orientalis* (Cupressaceae): *Cinara* (*Cupressobium*) *tujafilina*, *Lachnus* sp.
59. *Populus ciliata* (Salicaceae): *Lachnus longirostrum*
60. *Prunus armeniaca* (Rosaceae): *Pterochloroides persicae*
61. *Prunus cornuta* (Rosaceae): *Pyrolachnus imbricatus*

62. *Prunus domestica* (Rosaceae): *Pterochloroides persicae*  
 63. *Prunus dulcis* (Rosaceae): *Nippolachnus piri*, *Pterochloroides persicae*  
 64. *Prunus persica* (Rosaceae): *Nippolachnus bengalensis*, *Nippolachnus piri*, *Pterochloroides persicae*  
 65. *Prunus* sp. (Rosaceae): *Nippolachnus piri*, *Pterochloroides persicae*, *Pyrolachnus imbricatus*  
 66. *Pterocarya* sp. (Juglandaceae): *Kurisakia indica*  
 67. *Pyrus communis* (Rosaceae): *Lachnus tropicalis*, *Nippolachnus bengalensis*, *Nippolachnus piri*, *Pyrolachnus pyri*  
 68. *Pyrus khasiana* (Rosaceae): *Lachnus* sp., *Nippolachnus piri*  
 69. *Pyrus pashia* (Rosaceae): *Nippolachnus bengalensis*  
 70. *Pyrus* sp. (Rosaceae): *Nippolachnus piri*, *Pyrolachnus pyri*  
 71. *Quercus dealbata* (Fagaceae): *Eulachnus thunbergii*  
 72. *Quercus floribunda* (Fagaceae): *Lachnus tropicalis*  
 73. *Quercus indica* (Fagaceae): *Lachnus acutihirsutus*  
 74. *Quercus leucotrichophora* (Fagaceae): *Lachnus acutihirsutus*  
 75. *Quercus phillyraeoides* (Fagaceae): *Lachnus tropicalis*  
 76. *Quercus* sp. (Fagaceae): *Lachnus acutihirsutus*, *Lachnus quercihabitans*, *Lachnus tropicalis*  
 77. *Nippolachnus bengalensis*, *Nippolachnus himalayensis*, *Nippolachnus piri*  
 78. *Randia* sp. (Rubiaceae): *Taiwanaphis (Taiwanaphis) randiae*  
 79. *Rhododendron* sp. (Ericaceae): *Eulachnus thunbergii*  
 80. *Rosa moschata* (Rosaceae): *Maculolachnus submacula*  
 81. *Rosa* sp. (Rosaceae): *Maculolachnus submacula*  
 82. *Rubus* sp. (Rosaceae): *Maculolachnus rubi*  
 83. *Rumex* sp. (Polygonaceae): *Protrama longitarsus sclerodensus*  
 84. *Salix babylonica* (Salicaceae): *Lachnus longirostrum*, *Lachnus salicis*, *Tuberolachnus (Tuberolachnus) salignus*  
 85. *Salix fragilis* (Salicaceae): *Lachnus longirostrum*  
 86. *Salix* sp. (Salicaceae): *Lachnus longirostrum*, *Tuberolachnus (Tuberolachnus) salignus*  
 87. *Salix tetrasperma* (Salicaceae): *Tuberolachnus (Tuberolachnus) salignus*, *Lachnus longirostrum*, *Lachnus salicis*  
 88. *Salvia mooreroftiana* (Lamiaceae): *Protrama longitarsus sclerodensus*  
 89. *Setaria* sp. (Poaceae): *Pyrolachnus imbricatus*  
 90. *Sonchus asper* (Asteraceae): *Protrama longitarsus sclerodensus*  
 91. *Terminalia arjuna* (Combretaceae): *Paoliella (Paoliella) nirmalae*  
 92. *Thuja* sp. (Cupressaceae): *Cinara (Cupressobium) tujafilina*  
 93. *Triticum aestivum* ssp. *aestivum* (Poaceae): *Pyrolachnus imbricatus*  
 94. Indet.: *Kurisakia onigurumii*, *Cinara (Cinara) chaetorostrata*, *Lachnus longisetosum*, *Nippolachnus* sp.  
 95. Indet. (Combretaceae): *Taiwanaphis (Taiwanaphis) dineni*  
 96. On snow: *Cinara (Cinara) chaetorostrata*, *Cinara (Cinara) pilicornis*

### Conclusion

The family Aphididae is composed of total 24 subfamilies that globally includes 5079 species under 562 genera. In India, only 16 subfamilies were recognized comprising of 809 species under 208 genera. Herewith, food plant catalogue of

Indian aphids belonging to 7 less represented subfamilies, viz. Lachninae, Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae (Aphididae: Hemiptera) is presented. Total 41 species of Lachninae were recorded under 12 genera, of which more than half of the species are endemic and most of them are either monophagous or oligophagous. Remaining 6 subfamilies: Lizeriinae, Mindarinae, Phyllaphidinae, Saltusaphidinae, Taiwanaphidinae and Thelaxinae are least represented from India. Three subfamilies: Lizeriinae, Phyllaphidinae and Saltusaphidinae are each represented by only one monophagous species. Mindarinae, Taiwanaphidinae and Thelaxinae are represented by 2, 3 and 4 species of aphids, respectively. Among them, only one species of Thelaxinae feeds on plants of 5 families.

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