



CHECKLIST OF INSECT PESTS OF SESAME

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ABSTRACT

An updated checklist of insect pests of sesame *Sesamum indicum* L. is provided, with 201 species included. Among these, the Cicadellidae with 20 species and Pentatomidae with 19 species are predominant ones followed by Noctuidae (14), Miridae (11) and Chrysomelidae (10). Crop pest diversity analysis indicated that the foliage feeders were dominant group (54%) comprising both sucking pests (*Orosius albicinctus*, *Nesidiocoris tenuis*, *Bemisia tabaci* and *Aphis gossypii*) and defoliators (*Antigastra catalaunalis*, *Spilosoma obliqua*, *Acherontia lachesis* and *A. styx*). The pod feeding bugs (*Elasmolomus sordidus*, *Clavigralla gibbosa*, *Nezara viridula* and *Dolycoris indicus*) (16%) follow.

Key words: Sesame, insect pests, Cicadellidae, Pentatomidae, Noctuidae, Miridae, Chrysomelidae, foliage feeders, pod feeders

Sesame (*Sesamum indicum* L.) is one of the oilseed crops, and it is of Indian origin. It is a short duration crop (90-100 days), and with two distinct types of seeds viz., white and black and both yield edible oil. Sesame is attacked by many insect pests such as shoot and capsule borer, sesame gall fly, leaf hoppers, hawk moth, aphids, thrips, pod bugs etc. In addition, leafhopper (*Orosius albicinctus*) transmits mycoplasma disease which causes phyllody disease. Being an economically important crop and with changing scenario of pests in recent days, an updated list of pests attacking sesame is needed prior to planning IPM strategies. The present study is an attempt to prepare a comprehensive list of insect pests of sesame.

CHECKLIST

Literature pertaining to sesame insect pests and their management were collected and a comprehensive list of pests compiled. Insects were grouped according to their taxonomic grouping and feeding nature. Their nature of feeding, parts fed and the pertinent references were compiled and listed. A total of 201 species under 55 genera were observed on sesame worldwide. Of these, maximum number of species fall under Cicadellidae (15 genera and 20 species) followed by Pentatomidae (17 genera and 19 species), Noctuidae (8 genera and 14 species), Miridae (10 genera and 11 species) and Chrysomelidae (8 genera and 10 species). The minor pests were from Anobiidae, Dermestidae, Laemophloeidae, Hybosoridae, Meloidae, Nitidulidae (Coleoptera), Aleyrodidae, Alydidae, Cixiidae, Deliphacidae,

Dinidoridae, Oxycarenidae, Pseudococcidae, Scutelleridae, Tingidae (Hemiptera), Cosmopterigidae, Gelechiidae, Hesperidae (Lepidoptera), Eurytomidae, Formicidae (Hymenoptera), Drosophilidae (Diptera), Phlaeothripidae (Thysanoptera), Termitidae (Isoptera) and Gryllidae (Orthoptera) (1 genus, species each) (Fig. 1).

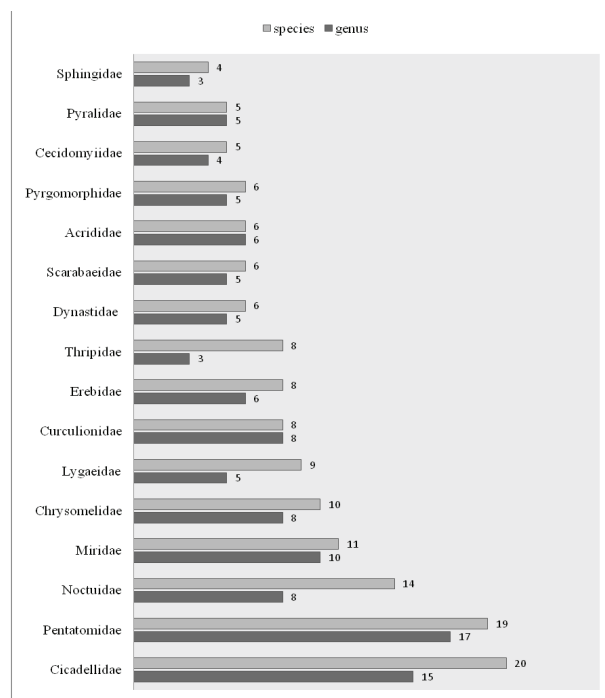


Fig. 1: Major insect families infesting *Sesamum indicum*

It was observed that the foliage feeders were the dominant (54%). *Orosius albicinctus*, *Nesidiocoris tenuis*, *Bemisia tabaci* and *Aphis gossypii* (Hemiptera) were the major sucking pests. Among these, *O. albicinctus* is vector for sesamum phyllody. Of the defoliators *Antigastra catalaunalis*, *Spilosoma obliqua*,

Acherontia lachesis and *A. styx* (Lepidoptera) were observed as the key pests. Pod feeding bugs (16%) were the next, causing major economic loss. These include *Elasmolomus sordidus*, *Clavigralla gibbosa*, *Nezara viridula* and *Dolycoris indicus* (Hemiptera) (Table 1; Fig. 2).

Table 1. Checklist of insect pests of *Sesamum indicum*

S. No	Order/ Family/ Scientific name	Distribution	Nature of herbivory	Stage of pest	Reference
Coleoptera					
Anobiidae					
1.	<i>Lasioderma serricorne</i> (Fabricius, 1792)	Brazil	Seed feeder (Storage)	Grub	Moura et al. (2017)
Cerambycidae					
2.	<i>Oberea</i> sp.	India	Stem feeder	Grub	Fletcher (1917); Nair (1975); Thangavelu (1989); David and Anathakrishnan (2004); Behera (2009)
Cetoniidae					
3.	<i>Cotinis mutabilis</i> (Gory & Percheron, 1833)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
4.	<i>Euphoria leucographa</i> (Gory & Percheron, 1833)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
5.	<i>Hologymnetis cinerea</i> (Gory & Percheron, 1833)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
Chrysomelidae					
6.	<i>Apthona nigrilabris</i> Duvivier, 1892	Bangladesh	Foliage feeder	Adults	Thangavelu (1989); Ahmed et al. (2014)
7.	<i>Aulacophora foveicollis</i> (Lucas, 1849)	India	Foliage feeder	Adults	Nair (1975); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009)
8.	<i>Aulacophora</i> sp.	India	Foliage feeder	Adults	Thangjan (2012)
9.	<i>Chaetocnema basalis</i> Baly, 1877	India	Foliage feeder	Adults	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
10.	<i>Monolepta signata</i> (Olivier, 1808)	Bangladesh	Foliage feeder	Adults	Ahmed et al. (2014)
11.	<i>Monolepta</i> sp.	Turkey	Foliage feeder	Adults	Atakan et al. (2017)
12.	<i>Pachnophorus bistriatus</i> Mulsant & Wahanru, 1852	India	Foliage feeder	Adults	David and Anathakrishnan (2004); Behera (2009); Paul and Jiia (2013)
13.	<i>Spermophagus</i> sp.	Turkey	Seed feeder	Adults	Atakan et al. (2017)
14.	<i>Systema</i> sp.	South America	Foliage feeder	Adults	Thangavelu (1989)
15.	<i>Zanitomorpha</i> sp.	India	Foliage feeder	Adults	Nair (1975); David and Anathakrishnan (2004); Behera (2009)

Curculionidae					
16.	<i>Blosyrus inaequalis</i> Boheman, 1845	India	Foliage feeder	Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
17.	<i>Baris helleri</i> Hartmann (1897)	Africa	Stem feeder	Adult	Thangavelu (1989)
18.	<i>Cyrtozemia</i> sp.	India	Foliage feeder	Adult	David and Anathakrishnan (2004); Ahuja (2005); Behera (2009); Biswas and Das (2011)
19.	<i>Episomus lacerta</i> (Fabricius, 1781)	India	Foliage feeder	Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
20.	<i>Mylocerus</i> <i>undecimpustulatus</i> Faust, 1891	Bangladesh	Foliage feeder	Adult	Biswas and Das (2011)
21.	<i>Pachnephorus</i> <i>impressus</i> Rosenhauer, 1856	India	Foliage feeder	Adult	Fletcher (1917); Joshi (1961); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
22.	<i>Tanymecus chloroleucus</i> (Wiedemann, 1819)	India	Stem feeder	Adult	Fletcher (1917); Joshi (1961); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
23.	<i>Tanymecus indicus</i> Faust, 1895	India	Stem feeder	Adult	Joshi (1961); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
Dermestidae					
24.	<i>Trogoderma granarium</i> Everts, 1898	India	Seed feeder (Storage)	Grub	Joshi (1961); Nair (1975); Thangavelu (1978); David and Anathakrishnan (2004); Behera (2009)
Dynastidae					
25.	<i>Cylocephala lunulata</i> Burmeister, 1847	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
26.	<i>C. sinaloae</i> Howden & Endrodi, 1966	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
27.	<i>Ligyris sallaei</i> Bates 1888	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
28.	<i>Megasoma pacheoi</i> Cartwright, 1963	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
29.	<i>Strategus aloeus</i> (Linnaeus, 1758)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
30.	<i>Xyloryctes corniger</i> Bates, 1888	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
Laemophloeidae					
31.	<i>Cryptolestes pusillus</i> (Schönherr, 1817)	Africa	Seed feeder (Storage)	Grub and Adult	Thangavelu (1978)
Hybosoridae					
32.	<i>Hybosorus illigeri</i> Reiche, 1853	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
Meloidae					
33.	<i>Hycleus pustulata</i> (Thunberg, 1821)	India	Flower feeder	Adult	Joshi (1961); Nair (1975); Bhadoria et al. (2000); David and Anathakrishnan (2004); Behera (2009)
Melolonthidae					
34.	<i>Phyllophaga cristagalli</i> (Arrow, 1933)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)

35.	<i>P. lenis</i> (Horn, 1887)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
36.	<i>P. opaca</i> (Moser, 1918)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
Nitidulidae					
37.	<i>Carpophilus obsoletus</i> Erichson, 1843	Asia	Seed feeder (Storage)	Grub and Adult	Thangavelu (1978)
Rutelidae					
38.	<i>Paranomala flavilla</i> Bates, 1888	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
39.	<i>Pelidnota lugubris</i> LeConte, 1874	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
40.	<i>P. virescens</i> Burmeister, 1844	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
Scarabaeidae					
41.	<i>Anomala antiqua</i> (Gyllenhal, 1817)	India	Root feeder; Flower feeder	Grub and Adult	Fletcher (1917)
42.	<i>Holotrichia consanguinea</i> Blanchard, 1851	Africa	Root feeder and Flower feeder	Grub and Adult	Thangavelu (1978)
43.	<i>H. serrata</i> (Fabricius, 1781)	India	Root feeder and Flower feeder	Grub and Adult	Joshi (1961); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
44.	<i>Maladera insanabilis</i> (Brenske, 1894)	India	Root feeder; Flower feeder	Grub and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
45.	<i>Oxycetonia albopunctata</i> (Fabricius, 1775)	India	Root feeder; Flower feeder	Grub and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Rakesh et al. (2009);
46.	<i>Oxygryllus ruginasus</i> (LeConte, 1856)	Mexico	Root feeder	Grub	Antonio Lugo-Garcia et al. (2017)
Silvanidae					
47.	<i>Oryzaephilus mercator</i> (Fauvel, 1889)	Africa	Seed feeder (Storage)	Grub and Adult	Thangavelu (1978)
48.	<i>O. surinamensis</i> (Linnaeus, 1758)	India	Seed feeder (Storage)	Grub and Adult	Joshi (1961); Srivastava (1970); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
Tenebrionidae					
49.	<i>Tribolium castaneum</i> (Herbst, 1797)	India	Seed feeder (Storage)	Grub and Adult	Srivastava (1970); Thangavelu (1978); David and Anathakrishnan (2004); Patnaik et al. (2013); Sanou et al. (2011); Sanon et al. (2018)
50.	<i>T. confusum</i> Jacquelin du Val, 1863	Uganda	Seed feeder (Storage)	Grub and Adult	Thangavelu (1978); Sanou et al. (2011); Sanon et al. (2018)
Diptera					
Agromyzidae					
51.	<i>Chromatomyia horticola</i> Goureaux, 1851	India	Foliage feeder	Larva	Nair (1975); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009)
52.	<i>Melanagromyza azawii</i> Spencer, 1973	India	Stem feeder	Larva	Nair (1975); Thangavelu (1978); Pillai et al. (1980); David and Anathakrishnan (2004); Behera (2009)

53.	<i>M. obtusa</i> (Malloch, 1914)	India	Stem feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Biswas and Das (2011)
	Cecidomyiidae				
54.	<i>Asphondylia sesami</i> Felt, 1916	India	Pod feeder	Larva	Joshi (1961); Nair (1975); Thangavelu (1978); Bhalodia (1983); Bhadauria et al. (2000); David and Anathakrishnan (2004); Ahuja (2005); Rakesh et al. (2009); Patidar (2010); David and Ramamurthy (2015); Jumale et al. (2016)
55.	<i>Dasyneura lini</i> (Barnes, 1936)	India	Flower feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
56.	<i>D. sesami</i> Grover & Prasad, 1966	India	Flower feeder	Larva	Joshi (1961); Prasad (1967); Nair (1975); David and Anathakrishnan (2004); Behera (2009); Ahirwar et al. (2009); Rakesh et al. (2009); Ahirwar and Gupta (2010); David and Ramamurthy (2015)
57.	<i>Schizomyia sesami</i> Barnes, 1939	Africa	Flower feeder	Larva	Barnes (1951)
58.	<i>Trotteria sesami</i> Barnes, 1939	Africa	Flower feeder	Larva	Barnes (1951)
	Drosophilidae				
59.	<i>Gitonides perspicax</i> Knab, 1914	India	Foliage feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Rakesh et al. (2009); Rakesh et al. (2010b);
	Psilidae				
60.	<i>Chyliza</i> sp.	India	Stem feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
61.	<i>Psila</i> sp.	India	Stem feeder	Larva	Fletcher (1917)
	Hemiptera				
	Aleyrodidae				
62.	<i>Bemisia tabaci</i> (Gennadius, 1889)	India	Foliage feeder	Nymph and Adult	Joshi (1961); Nair (1975); Mishra (1977); Thangavelu (1989); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Ahirwar et al. (2009); Patidar (2010); Rakesh et al. (2009); Rakesh et al. (2010a); Mishra et al. (2015); Atakan et al. (2017)
	Alydidae				
63.	<i>Leptocorisa acuta</i> (Thunberg, 1783)	Bangladesh	Pod feeder	Nymph and Adult	Biswas and Das (2011)
	Aphididae				
64.	<i>Aphis craccivora</i> Koch, 1854	Peru	Foliage feeder	Nymph and Adult	Ortiz (1980); Thangavelu (1989);

65.	<i>A. gossypii</i> Glover, 1877	India	Foliage feeder	Nymph and Adult	Nair (1975); Thangavelu (1989); Bhadoria et al. (2000); David and Anathakrishnan (2004); Rakesh et al. (2009); Rakesh et al. (2010a); David and Ramamurthy (2015); Atakan et al. (2017)
66.	<i>Myzus persicae</i> (Sulzer 1776)	Japan	Foliage feeder	Nymph and Adult	Joshi (1961); Nair (1975); David and Kumarswami (1982); Thangavelu (1989); Bhadoria et al. (2000); David and Anathakrishnan (2004); Sintim et al. (2010); Akinyemi et al. (2015)
Cicadellidae					
67.	<i>Amrasca biguttula</i> (Ishida, 1913)	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
68.	<i>Balclutha incisa</i> (Matsumura, 1902)	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
69.	<i>B. punctata</i> Fabricius, 1775	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
70.	<i>Batracomorphus angustatus</i> Osborn, 1934	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
71.	<i>Cicadulina bipunctata</i> (Melichar, 1904)	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
72.	<i>Cofana spectra</i> (Distant, 1908)	Bangladesh	Foliage feeder	Nymph and Adult	Biswas and Das (2011)
73.	<i>Deltocephalus</i> sp.	Africa- Asia	Foliage feeder	Nymph and Adult	Thangavelu (1989)
74.	<i>Empoasca decipiens</i> Paoli, 1930	Iran	Foliage feeder	Nymph and Adult	Parvin (1992); Atakan et al. (2017)
75.	<i>E. sesamae</i> Naheed & Ahmed, 1980	Pakistan	Foliage feeder	Nymph and Adult	Naheed and Ahmed (1980); Thangavelu (1989)
76.	<i>E. terminalis</i> Distant, 1918	Bangladesh	Foliage feeder	Nymph and Adult	Nair (1975); Bhadoria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Biswas and Das (2011)
77.	<i>Empoasca maculifrons</i> (Motschulsky, 1863)	India	Foliage feeder	Nymph and Adult	Abraham et al. (1973); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
78.	<i>Exitianus</i> sp.	India	Foliage feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
79.	<i>Hishimonus phycitis</i> (Distant, 1908)	India	Foliage feeder	Nymph and Adult	Nair (1975); Nath (1975); Bhadoria et al. (2000); David and Anathakrishnan (2004); Behera (2009)
80.	<i>Jacobiasca lybica</i> (Bergevin & Zanon, 1922)	Egypt	Foliage feeder	Nymph and Adult	Mahmoud (2012)
81.	<i>Neotalitrus haematoceps</i> (Mulsant & Rey, 1855)	Iran	Foliage feeder	Nymph and Adult	Atakan et al. (2017); Özdemiş (2018); Hasanvand (2018)

82.	<i>N. opacipennis</i> (Lethierry, 1876)	Europe- Asia	Foliage feeder	Nymph and Adult	Thangavelu (1989);
83.	<i>Orosius albicinctus</i> Distant, 1918	India	Foliage feeder	Nymph and Adult	Joshi (1961); Nair (1975); David and Kumarswami (1982); Thangavelu (1978); Bhadoria et al. (2000); David and Anathakrishnan (2004); Ahuja (2005); Ahirwar et al. 2009; Rakesh et al. (2009); Patidar (2010); Rakesh et al. (2010a); Gangwar et al. (2014); Choudhary et al. (2015); David and Ramamurthy (2015)
84.	<i>O. orientalis</i> (Matsumura, 1914)	Turkey	Foliage feeder	Nymph and Adult	Özdemir (2017); Atakan et al. (2017)
85.	<i>Psammotettix</i> sp.	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
86.	<i>Zyginida</i> sp.	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
Cixiidae					
87.	<i>Oliarus</i> sp.	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
Coreidae					
88.	<i>Clavigralla gibbosa</i> Spinola, 1837	Bangladesh	Pod feeder	Nymph and Adult	Nair (1975); Bhadoria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Biswas and Das (2011)
89.	<i>Cletus bipunctatus</i> (Herrich-Schäffer, 1840)	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
Delphacidae					
90.	<i>Cemus</i> sp.	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
Dinidoridae					
91.	<i>Coridius janus</i> (Fabricius, 1775)	India		Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
Lygaeidae					
92.	<i>Elaşmolomus sordidus</i> (Fabricius, 1787)	India	Pod feeder	Nymph and Adult	Joshi (1961); Nair (1975); Thangavelu (1978); David and Anathakrishnan (2004); Kalaiyarasan and Palanisamy (2004); Behera (2009); Rakesh et al. (2009); Ramesh et al. (2012)
93.	<i>Metapoplax origani</i> Kolenati, 1845	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
94.	<i>Nysius cymoides</i> (Spinola, 1837)	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
95.	<i>N. graminicola</i> (Kolenati, 1845)	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
96.	<i>N. helveticus</i> (Herrich- Schäffer, 1850)	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)

97.	<i>N. inconspicuous</i> Distant 1904	India	Pod feeder	Nymph and Adult	Fletcher (1917) ; Nair (1975); Thangavelu (1978); David and Anathakrishnan (2004); Behera (2009)
98.	<i>N. thymi</i> (Wolff, 1804)	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
99.	<i>Spilostethus pandurus</i> (Scopoli, 1763)	India	Pod feeder	Nymph and Adult	Nair (1975); Thangavelu (1978); Thangavelu (1979); Ahuja (1989); David and Anathakrishnan (2004); Behera (2009); Thangjan (2012)
100.	<i>Spilostethus pandurus</i> <i>militaris</i> (Fabricius, 1775)	India	Pod feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
Miridae					
101.	<i>Campylomma</i> sp.	India	Foliage feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Thangjan (2012)
102.	<i>Creontiades pallidifer</i> (Walker, 1873)	India	Foliage feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
103.	<i>C. pallidus</i> (Rambur, 1839)	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
104.	<i>Creontiades</i> sp.	Egypt	Foliage feeder	Nymph and Adult	Mahmoud (2012)
105.	<i>Dortus</i> sp.	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
106.	<i>Lygus italicus</i> Wagner, 1950	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
107.	<i>Nesidiocoris tenuis</i> (Reuter, 1895)	India	Foliage feeder	Nymph and Adult	Joshi (1961); Nair (1975); Thangavelu (1978); Bhadauria et al. (2000); Biswas et al. (2001); David and Anathakrishnan (2004); Ahuja (2005); Ahirwar et al. (2009); Patidar (2010); Paul and Jiia (2013); Oida (2017)
108.	<i>Poppiocapsidea</i> <i>biseratense</i> (Distant, 1903)	India	Foliage feeder	Nymph and Adult	Thangjan (2012)
109.	<i>Rogmus</i> sp.	India	Foliage feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
110.	<i>Stenodema</i> sp.	Turkey	Foliage feeder	Nymph and Adult	Atakan et al. (2017)
111.	<i>Taylorilygus</i> sp.	Africa	Foliage feeder	Nymph and Adult	Thangavelu (1978)
Oxycarenidae					
112.	<i>Oxycarenus</i> <i>hyalinipennis</i> (Costa, 1847)	India	Pod feeder	Nymph and Adult	Thangjan (2012); Atakan et al. (2017)
Pentatomidae					
113.	<i>Acrosternum</i> sp.	Brazil	Pod feeder	Nymph and Adult	Perioto et al. (2004)
114.	<i>Adria parvula</i> Dallas, 1857	India	Pod feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)

115.	<i>Agonoscelis nubilis</i> (Fabricius, 1775)	India	Pod feeder	Nymph and Adult	Nair (1975); Nath, (1975)
116.	<i>A. pubescens</i> (Thunberg)	Sudan	Pod feeder	Nymph and Adult	Thangavelu (1989); El-Massad, 2012
117.	<i>Aspongopus janus</i> (Fabricius, 1775)	India	Pod feeder	Nymph and Adult	Nair (1975); Biswas and Das (2011)
118.	<i>Bagrada hilaris</i> (Burmeister, 1835)	India	Pod feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
119.	<i>Carpocoris</i> <i>purpureipennis</i> (DeGeer, 1773)	Turkey	Pod feeder	Nymph and Adult	Atakan et al. (2017)
120.	<i>Chinavia hilaris</i> Say, 1832	America	Pod feeder	Nymph and Adult	Thangavelu (1989)
121.	<i>Dolycoris indicus</i> Stål, 1876	India	Pod feeder	Nymph and Adult	Nair (1975); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Ahmed et al. (2014); (David and Ramamurthy, 2015)
122.	<i>Edessa</i> sp.	Brazil	Pod feeder	Nymph and Adult	Perioto et al. (2004)
123.	<i>Eysarcoris montivagus</i> Distant, 1904	India	Pod feeder	Nymph and Adult	Thangjan (2012)
124.	<i>E. ventralis</i> (Westwood, 1837)	Bangladesh	Pod feeder	Nymph and Adult	Fletcher (1917); Nair (1975); David and Anathakrishnan (2004); Behera (2009); Biswas and Das (2011); David and Ramamurthy (2015); Atakan et al. (2017)
125.	<i>Halyomorpha halys</i> (Stal, 1855)	Japan	Pod feeder	Nymph and Adult	Sintim et al. (2010)
126.	<i>Hermolaus typicus</i> Distant 1902	India	Pod feeder	Nymph and Adult	Thangjan (2012)
127.	<i>Nezara viridula</i> (Linnaeus, 1758)	Bangladesh	Pod feeder	Nymph and Adult	Joshi (1961); Nair (1975); Thangavelu (1989); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Rakesh et al. (2009); Rakesh et al. (2010a); Ahmed et al. (2014); David and Ramamurthy (2015); Atakan et al. (2017)
128.	<i>Phricodus hystrix</i> Germar, 1837	India	Pod feeder	Nymph and Adult	Nair (1975); Thangavelu (1989); David and Anathakrishnan (2004); Behera (2009)
129.	<i>Piezodorus</i> <i>hyubneri</i> (Gmelin, 1790)	Bangladesh	Pod feeder	Nymph and Adult	Ahmed et al. (2014)
130.	<i>Plautia crossota</i> (Dallas, 1851)	India	Pod feeder	Nymph and Adult	Thangjan (2012)
131.	<i>Thyantha perditor</i> (Fabricius, 1794)	Brazil	Pod feeder	Nymph and Adult	Perioto et al. (2004)
Pseudococcidae					
132.	<i>Phenacoccus solenopsis</i> (Tinsley, 1898)	Pakistan	Foliage feeder	Nymph and Adult	Arif et al. (2009)
Pyrrhocoridae					
133.	<i>Dysdercus cingulatus</i> (Fabricius, 1775)	Bangladesh	Pod feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Biswas and Das (2011)

134. *D. koenigii* (Fabricius, 1775) Bangladesh Pod feeder Nymph and Adult Bhadauria et al. (2000); Ahmed et al. (2014)
135. *Pyrrhocoris* sp. Egypt Pod feeder Nymph and Adult Mahmoud (2012)
- Scutelleridae**
136. *Calidea* sp. Africa Pod feeder Nymph and Adult Thangavelu (1989)
- Tingidae**
137. *Teleonemia scrupulosa* Stal, 1873 Uganda Foliage feeder Nymph and Adult Davies and Greathead (1967)
- Hymenoptera**
- Eurytomidae**
138. *Eurytoma* sp. India Pod feeder Larva Behera (2009)
- Formicidae**
139. *Monomorium destructor* (Jerdon, 1851) India Seed feeder (Field) Adult Nair (1975); Jakhmola and Kaushik (1976); David and Anathakrishnan (2004); Ahuja (2005); Behera (2009)
- Isoptera**
- Termitidae**
140. *Microtermes* sp. India Root feeder Workers (Larva) Nair (1975); David and Anathakrishnan (2004); Behera (2009)
- Lepidoptera**
- Crambidae**
141. *Antigastra catalaunalis* (Duponchel, 1833) India Foliage feeder Larva Fletcher (1917); Menon et al. (1960); Joshi (1961); Pradhan (1969); Nair (1975); Bhalodia (1983); Thangavelu (1989); Singh et al. (1992); Bhadauria et al. (2000); Biswas et al. (2001); Singh (2003); Ahuja and Kalyan (2003); David and Anathakrishnan (2004); Ahuja (2005); Behera (2009); Ahirwar et al. 2009; Rakesh et al. (2009); Patidar (2010); Karuppaiah and Nadarajan (2011); Akinyemi et al. (2015); David and Ramamurthy (2015); Jumale et al. (2016); Wazire and Patel (2016); Chaitra (2016); Simoglou et al. (2017); Choudhary et al. (2017)
142. *Maruca vitrata* (Fabricius, 1787) Australia Pod feeder Larva Taylor (1978); Sharma (1998)
143. *Nascia ciliialis* (Hubner, 1796) Bulgaria Foliage feeder Larva Taylor (1978); Sharma (1998)
- Cosmopterigidae**
144. *Pyroderces sesamivora* Meyrick, 1933 Burma Foliage feeder Larva Fletcher (1917)
- Erebidae**
145. *Aloa albistriga* Walker, F., 1864 India Foliage feeder Larva Nair (1975); David and Anathakrishnan (2004); Behera (2009); Bhatt et al. (2013)

146.	<i>A. lactinea</i> (Cramer, 1777)	India	Foliage feeder	Larva	Abraham et al. (1973); Nair (1975); David and Anathakrishnan (2004); Behera (2009)
147.	<i>A. moorei</i> Butler, 1876	India	Foliage feeder	Larva	Joshi (1961); Nair (1975); Parihar (1979); Thangavelu (1989); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009)
148.	<i>Euproctis fraterna</i> Moore, 1883	India	Foliage feeder	Larva	Abraham et al. (1973); Nair (1975); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009)
149.	<i>Olepa ricini</i> (Fabricius, 1775)	India	Foliage feeder	Larva	Nair (1975); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Sahayaraj (2014); David and Ramamurthy (2015);
150.	<i>Somena scintillans</i> Walker, 1856	India	Foliage feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009); David and Ramamurthy (2015)
151.	<i>Spilarctia casigneta</i> Kollar, 1884	Nepal	Foliage feeder	Larva	Joshi (1971); Roy and Barik (2013)
152.	<i>Spilosoma obliqua</i> (Walker, 1855)	India	Foliage feeder	Larva	Joshi (1961); Nair (1975); Gupta et al. (1979); Thangavelu (1989); Bhadauria et al. (2000); Biswas et al. (2001); David and Anathakrishnan (2004); Patidar (2010); Rakesh et al. (2010b); Gangwar et al. (2014)
Gelechiidae					
153.	<i>Bilobata subsecivella</i> (Zeller, 1852)	India	Foliage feeder	Larva	Gujar (2014)
Hesperiidae					
154.	<i>Polites coras</i> (Cramer, 1775)	Bangladesh	Foliage feeder	Larva	Biswas and Das (2011)
Noctuidae					
155.	<i>Agrotis ipsilon</i> (Hufnagel, 1766)	Bangladesh	Foliage feeder	Larva	Biswas and Das (2011); Atakan et al. (2017)
156.	<i>A. segetum</i> Denis & Schiffermüller, 1775	India	Foliage feeder	Larva	Kannan (1925)
157.	<i>Argyrogramma signata</i> Fabricius, 1794	India	Foliage feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
158.	<i>Chrysodeixis acuta</i> (Walker, 1858)	Nigeria	Foliage feeder	Larva	Uddin and Adewale (2014)
159.	<i>C. chalcites</i> (Esper, 1789)	India	Foliage feeder	Larva	Mishra et al. (2017)
160.	<i>C. includens</i> Walker, 1858	Brazil	Foliage feeder	Larva	Specht et al. (2015)
161.	<i>Helicoverpa armigera</i> (Hubner, 1808)	India	Foliage feeder	Larva	Abraham et al. (1973); Nair (1975); David and Anathakrishnan (2004); Behera (2009)

162.	<i>H. fletcheri</i> Hardwick, 1965	Africa	Foliage feeder	Larva	Van der Vossen and Geoffrey (2007)
163.	<i>Heliothis virescens</i> (Fabricius, 1777)	America	Foliage feeder	Larva	Pair et al. (1982)
164.	<i>Spodoptera exigua</i> (Hübner, 1808)	India	Foliage feeder	Larva	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Atakan et al. (2017)
165.	<i>S. littoralis</i> (Boisduval, 1833)	Turkey	Foliage feeder	Larva	Atakan et al. (2017)
166.	<i>S. litura</i> (Fabricius, 1775)	Japan	Foliage feeder	Larva	Nair (1975); Thangavelu (1989); David and Anathakrishnan (2004); Behera (2009); Sintim et al. (2010)
167.	<i>Thysanoplusia orichalcea</i> Fabricius, 1775	Bangladesh	Foliage feeder	Larva	Nair (1975); Bhadauria et al. (2000); David and Anathakrishnan (2004); Behera (2009); Biswas and Das (2011)
168.	<i>Trichoplusia ni</i> (Hubner, 1803) Pyralidae	Japan	Foliage feeder	Larva	Sintim et al. (2010)
169.	<i>Cadra cautella</i> (Walker, 1863)	Brazil	Seed feeder (Storage)	Larva	Joshi (1961); Srivastava (1970); Nair (1975); LeCato (1976); Thangavelu (1978); David and Anathakrishnan (2004); Behera (2009); Sanou et al. (2011); Sanon et al. (2018)
170.	<i>Corcyra cephalonica</i> (Stainton, 1866)	India	Seed feeder (Storage)	Larva	Srivastava (1970); Nair (1975); Thangavelu (1978); David and Anathakrishnan (2004); Behera (2009); Patnaik et al. (2013)
171.	<i>Phycita cirrhodelta</i> Meyrick, 1933	Indonesia	Seed feeder (Storage)	Larva	LeCato (1976)
172.	<i>Plodia interpunctella</i> (Hubner, 1813)	Ethiopia	Seed feeder (Storage)	Larva	Gebremichael (2017)
173.	<i>Pyralis farinalis</i> Linnaeus, 1758 Sphingidae	India	Seed feeder (Storage)	Larva	Ranjitsingh et al. (2015)
174.	<i>Acherontia lachesis</i> (Fabricius, 1798)	India	Foliage feeder	Larva	Nair (1975); Nayar et al. (1976); David and Anathakrishnan (2004); Behera (2009); Ghorpadé et al. (2013)
175.	<i>A. styx</i> Westwood, 1848	India	Foliage feeder	Larva	Bell and Scott (1937); Joshi (1961); Pradhan (1969); Nair (1975); Bhalodia (1983); Thangavelu (1989); Bhadauria et al. (2000); Biswas et al. (2001); David and Anathakrishnan (2004); Ahuja (2005); Rakesh et al. (2009); Patidar (2010); Rakesh et al. (2010b); Ghorpadé et al. (2013); (David and Ramamurthy, 2015)

176.	<i>Herse convolvuli</i> (Linnaeus, 1758)	India	Foliage feeder	Larva	Bell and Scott (1937); Ghorpadé et al. (2013)
177.	<i>Hippotion echeclus</i> Boisduval, 1875	India	Foliage feeder	Larva	Bell and Scott (1937); Nair (1975); David and Anathakrishnan (2004); Behera (2009); Ghorpadé et al. (2013)
Tortricidae					
178.	<i>Lobesia dryopelta</i> Meyrick, 1907	Oriental	Foliage feeder	Larva	Diakonoff (1954)
179.	<i>L. rhombophora</i> Diakonoff, 1954	Indonesia	Foliage feeder	Larva	Diakonoff (1954)
Orthoptera					
Acrididae					
180.	<i>Acrotylus insubricus</i> Scopoli, 1786	Egypt	Foliage feeder	Nymph and Adult	Mahmoud (2012)
181.	<i>Chorthippus brunneus</i> (Thunberg, 1815)	Ethiopia	Foliage feeder	Nymph and Adult	Kinati (2017)
182.	<i>Diabolocatantops axillaris</i> (Thunberg, 1815)	Ethiopia	Foliage feeder	Nymph and Adult	Kinati (2017)
183.	<i>Heteracris littoralis</i> (Rambur, 1838)	Egypt	Foliage feeder	Nymph and Adult	Mahmoud (2012)
184.	<i>Oxya chinensis</i> Thunberg, 1815	Bangladesh	Foliage feeder	Nymph and Adult	Bhadauria et al. (2000); Biswas and Das (2011)
185.	<i>Schistocerca gregaria</i> (Forskål, 1775)	Sudan	Foliage feeder	Nymph and Adult	Ba-Angood (1977)
Gryllidae					
186.	<i>Brachytrypes achatinus</i> Agassiz, 1846	Bangladesh	Seed feeder	Nymph and Adult	Biswas and Das (2011)
Pyrgomorphidae					
187.	<i>Atratomorpha crenulata</i> (Fabricius, 1793)	Bangladesh	Foliage feeder	Nymph and Adult	Biswas and Das (2011)
188.	<i>A. lata</i> (Mochulsky, 1866)	Japan	Foliage feeder	Nymph and Adult	Sintim et al. (2010)
189.	<i>Chrotogonus trachypterus</i> (Blanchard, 1836)	Bangladesh	Foliage feeder	Nymph and Adult	Nair (1975); Thangavelu (1989); Bhadauria et al. (2000); David and Anathakrishnan (2004); Rakesh et al. (2009); Rakesh et al. (2010b); Biswas and Das (2011)
190.	<i>Poekilocerus pictus</i> (Fabricius, 1775)	India	Foliage feeder	Nymph and Adult	Anand et al. (2016)
191.	<i>Pyrgomorpha conica deserti</i> Bei-Bienko, 1951	India	Foliage feeder	Nymph and Adult	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
192.	<i>Zonocerus variegatus</i> Linnaeus, 1758	Africa	Foliage feeder	Nymph and Adult	Thangavelu (1989); Akinyemi et al. (2015)
Thysanoptera					
Phlaeothripidae					
193.	<i>Haplothrips reuteri</i> (Karny, 1907)	Turkey	Flower feeder	Nymph	Atakan et al. (2017)

Thripidae

194.	<i>Frankliniella occidentalis</i> (Pergande, 1895)	Turkey	Flower feeder	Nymph	Atakan et al. (2017)
195.	<i>F. schultzei</i> (Trybom, 1910)	Bangladesh	Flower feeder	Nymph	Nair (1975); David and Anathakrishnan (2004); Ahuja (2005); Biswas and Das (2011)
196.	<i>Scirtothrips dorsalis</i> Hood, 1919	India	Foliage feeder	Nymph	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Thangjan (2012)
197.	<i>Thrips hawaiiensis</i> (Morgan, 1913)	India	Foliage feeder	Nymph	Nair (1975); David and Anathakrishnan (2004); Behera (2009); Atakan et al. (2017)
198.	<i>T. palmi</i> Karny, 1925	India	Flower feeder	Nymph	Ananthakrishnan (1955); Nair (1975); David and Anathakrishnan (2004); Ahuja (2005); Behera (2009); Patidar (2010)
199.	<i>T. setosus</i> Moulton, 1928	Netherlands	Foliage feeder	Nymph	Miyazaki and Kudo (1988)
200.	<i>T. subnudula</i> (Karny, 1926)	India	Foliage feeder	Nymph	Nair (1975); David and Anathakrishnan (2004); Behera (2009)
201.	<i>T. tabaci</i> Lindeman, 1889	India	Foliage feeder	Nymph	Bhadauria et al. (2000); Behera (2009); Atakan et al. (2017)

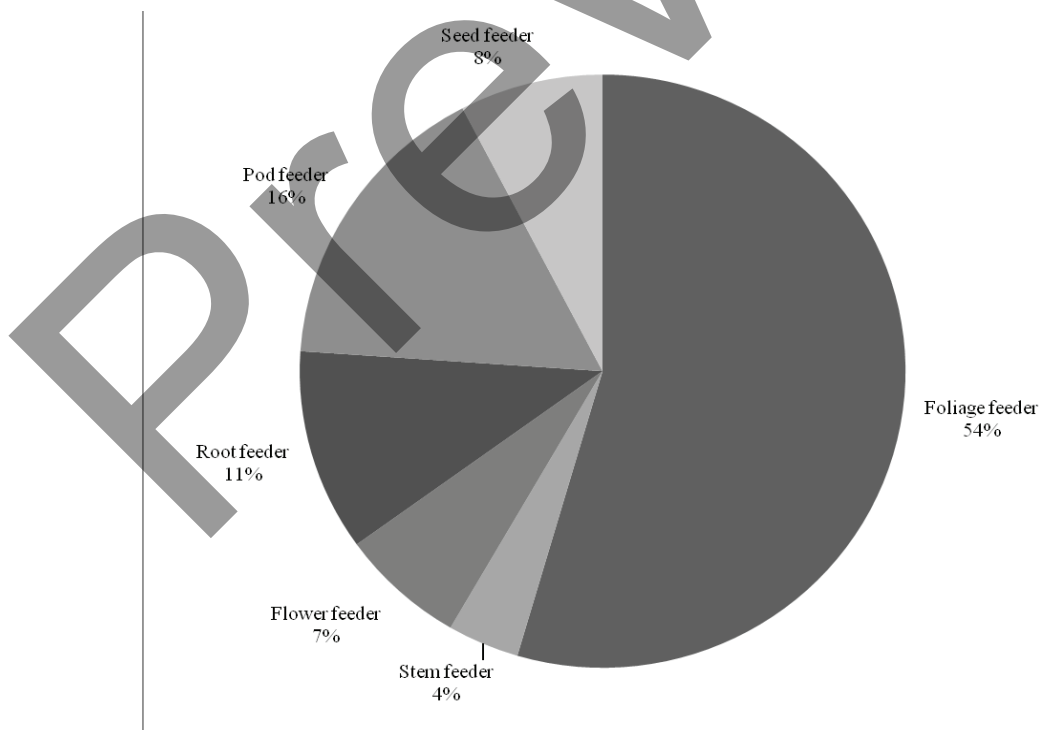


Fig. 2: Functional diversity of insect pests of *Sesamum indicum*

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