



OCCURRENCE OF LAC INSECT AND ITS HOST PLANTS IN MADHYA PRADESH

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ABSTRACT

Lac insect occurrence was observed in 302 locations, and samples of 267 populations belonging to Rangeeni and 35 from Kusmi strains were collected. A total of 17 host plants belonging to 7 genera were observed with live lac encrustation. Maximum frequency of occurrence was seen on Palas in 133 sites (44.03%) followed by Pipal in 97 sites (32.11%), Kusum- 35 sites (11.60%), Ber- 15 sites (4.97%) and other 13 lac hosts in 22 sites. Maximum lac insect occurrence in terms of sites were reported from Seoni (49- 16.2%), followed by Mandla (42- 13.9%), Balaghat (39- 12.9%), Hoshangabad (13- 4.3%), Chhindwara (10- 3.31%) and other 41 districts of Madhya Pradesh (149 sites). During the study, 2 colour variants were observed- these are crimson (236 sites) and yellow (62 sites) and crimson-yellow (mixed- 4 sites). The study listed 167 lac cultivation sites, of which the maximum cultivated sites were from Seoni district (49 sites- 29.30%) followed by Balaghat (39 sites- 23.40%), Mandla (30 sites-18.00%), Hoshangabad (9- 5.39%) and other ten districts (40 sites). In natural condition total 135 lac insect occurrence sites were observed and of these maximums were observed in Rajgarh, Morena, Shivpuri (each in 8 sites- 5.93%) followed by Sagar, Indore, Mandsaur, Agar Malwa each (6 sites- 4.44%) and other 87 sites in 32 other districts.

Key words: Lac insect, rangeeni, kusmi, palas, pipal, colour, crimson, yellow, mixed, diversity, relative abundance, Mandla, Balaghat, Hoshangabad, Chhindwara, natural occurrence

Lac is a resinous secretion of lac insect *Kerria lacca* Kerr. (Tachardiidae: Hemiptera). Lac insects are plant sap feeders (Sharma et al., 2006) and thrive well only on certain plant species known as lac host (Kapur, 1962 and Varshney, 1985). Lac insect's nymph settle and feed phloem sap of host plants by piercing its proboscis into phloem region of succulent shoot. There are >400 lac hosts reported throughout the world (Kapur, 1962; Varshney, 1968 and Sharma et al, 1997). Palas, Ber and Kusum are the most common and major hosts for commercial lac production in India (Roonwal, 1962; Pal, 2009) which are found in states of Jharkhand, Chhattisgarh, Madhya Pradesh, West Bengal, Maharashtra and its adjoining states (Sharma et al, 2006 and Pal et al, 2011). Lac production is confined to South, Southeast and East Asian countries in the tropical forest region (Ramani et al., 2007) with India as the leading lac producing country contributing about 80% (Ramani, 2002) with an annual production of 20,000 mt (Pal et al., 2011). Lac insects are the crowning glory of India's rich insect fauna. Of the nine genera and 99 species reported from all over the world, two genera and 26 species are from India, representing 26.3% of the known lac-insect species diversity. Mainly *K. lacca* is exploited for commercial

production of lac. *Kerria chinensis* in the north eastern states and *K. sharda* in coastal regions of Orissa and West Bengal are also cultivated to a certain extent (Sharma et al., 2006). In India, Jharkhand state shares 50.83% of total lac production followed by Chhattisgarh (14.58%), Madhya Pradesh (14.41%), Maharashtra (8.98%), Orissa (4.21%), West Bengal (2.66%), Assam (1.68%) (Yogi et al., 2018). Total export of lac and its value-added products in 2012-2013 was 543620.51 mt. The major lac producing districts in Madhya Pradesh are Balaghat, Seoni, Mandla, Chhindwara, Dindori, Narsinghpur and Hoshangabad and they contribute about 80% of the lac produced in the state (Thomas, 2010) Among these districts, Seoni is leading district, which produced 900 mt annually followed by Balaghat (882 mt) (Yogi et al., 2018).

Potential of other lac insect species reported from the country remains to be exploited. Wild populations of lac insects are principally distributed in the forest and subforest regions. Fast depleting forest cover of the country is a serious threat to their biodiversity as well as their host plants. It was reported that cultivation of lac insect is restricted in eastern parts and some pockets of central parts of Madhya Pradesh on major

host plants like Palas, Ber and Kusum trees. However, natural lac insect occurrence is reported throughout the state with number of specific host plants. In the state presence of lac insect on different host plants are sign of favourable climatic condition for the natural occurrence of lac insect/ host plants. There is lack of awareness among local people about the existence of lac insect genetic resources on these host trees and ignorantly, the natural habitat of lac insects of the region is destroyed host plants/ lac insects recorded from this region will help to promote lac culture in other areas as well as biodiversity of lac insect species will remain conserved and maintained. There are plenty of host plants available in this region which provides greater scope for commercial lac culture. The present field study was carried out with the intent to record the lac insect occurrence and also to record the new or potential host plants.

MATERIALS AND METHODS

The field survey was conducted in 319 blocks of 51 districts in Madhya Pradesh during 2015-2019 to document occurrence of lac insect under the ICAR-Network Project on Conservation of Lac Insect Genetic Resources. All districts were surveyed to identify cultivated and natural occurrence sites, with documentation of district wise occurrence, colour variation and lac encrustation on host plants. Prior to undertaking the survey, contact was made with the concerned Forest Department DFO in all surveyed districts. The districts which have information about lac insect/ host plant occurrence and cultivation status were recorded. Thereafter, each forest range office in each block was visited in various districts. Information was also taken from traders and farmers at block level. With this pre-information and cultivation status a number of surveys were undertaken at block level. The live lac insect was traced through binocular or visually. Randomly different lac host plants were also observed for identifying lac species. The observations of different parameters of host plants, their intensity and location were made. The lac insect and host plants were surveyed and observed for the presence of lac insects, their strain, growth, stage, intensity and colour variation, and these documented in prescribed passport datasheet, photographs along with GPS coordinates (Montana Garmin). In the field survey if lac insect samples were found, then the branches having the lac insect were collected using secateurs and tree pruner and kept in the 60 mesh net for proper aeration during travelling period and labelled. The relative abundance

was calculated as follows:

Relative abundance (RD %) =

$$\frac{\text{No. of host plant of one species}}{\text{Total no. host plant of all species}} \times 100$$

RESULTS AND DISCUSSION

Fifty one districts covering 319 blocks of Madhya Pradesh were surveyed. During study visual survey was made in the fringe areas of forests and farmers field and numbers of host plants were observed (Table 1, 2). The cultivated populations of lac insect was observed on major host plants Palas (*Butea monosperma*), Kusum (*Schleichera oleosa*), Ber (*Ziziphus mauritiana*) and Ghont (*Ziziphus xylopyra*) only. However, natural population of lac insect was reported on Pipal (*Ficus religiosa*), Bargad (*Ficus benghalensis*), Rain tree (*Albizia saman*), Kala siris (*Albizia lebbek*), Gular (*Ficus racemosa*), Pakud (*Ficus rumphii*), Akashmoni (*Acacia auriculiformis*), Khair (*Acacia catechu*), Jangli Jalebi (*Pithocibium dulce*), Jangli Bargad (*Ficus citrifolia*), Sitaphal (*Annona squamosa*), Babul (*Acacia nilotica*) and Tendu (*Diospyros melanoxylon*). A total 302 lac occurrence sites were recorded, and the occurrences of lac insect/ host plants as depicted in Table 1 and Fig. 1.

Occurrence

Cultivation sites: During the study, total 167 lac cultivated sites were reported from different districts of Madhya Pradesh. Maximum lac cultivated sites were reported from Seoni district, 49 sites (29.30%) followed by Balaghat in 39 sites (23.40%), Mandla 30 sites (18.00%), Hoshangabad 9 (5.39%), Narsinghpur 05 sites (2.99%), Dindori, Shahdol each 5 sites (2.99%), Anuppur, Betul, Katni 04 sites (2.40%), Jabalpur,

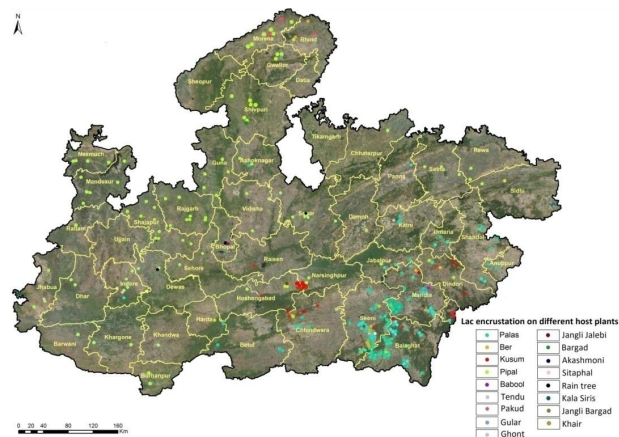


Fig. 1. Live lac insect occurrence in Madhya Pradesh

Table 1. Occurrence of lac insect in cultivated sites

District	Block with lac insect occurrence sites	Host plants found with lac encrustation	Survey period
Mandla	Nayanganj (1), Nainpur (19), Bichhiya (5), Mohgaon (3)	<i>Butea monosperma</i> , <i>Schleichera oleosa</i> , <i>Ziziphus mauritiana</i>	May, June, Nov. 2015, Nov. 2016, May 2019
Seoni	Ghughri (1), Mavai (1), Barghat (22), Kurai (7), Seoni (7), Keolari (6), Lakanadon (2), Dhanora (5)	<i>Butea monosperma</i> , <i>Ziziphus mauritiana</i> , <i>Schleichera oleosa</i> , <i>Diospyros melanoxylon</i> , <i>Acacia auriculiformis</i>	July, Nov., Aug. 2015, Sep., Nov. 2016, Nov. 2019
Balaghat	Lalbarra (6), Waraseoni (10), Katangi (6), Paraswara (07), Balaghat (3), Lanji (1), Kirnapur (4), Baihar (2)	<i>Butea monosperma</i> , <i>Schleichera oleosa</i> , <i>Ziziphus mauritiana</i> , <i>Diospyros melanoxylon</i>	Aug., Nov. and July 2015, Nov. 2019
Anuppur	Jaithari (3), Anuppur (1)	<i>Butea monosperma</i> , <i>Ziziphus mauritiana</i>	July 2015
Shahdol	Budhar (2), Gohparu (1), Jaisinghnagar (1), Pali (1)	<i>Butea monosperma</i>	June 2015 and Oct. 2017
Dindori	Bajag (1), Dindori(2), Shahpur (2)	<i>Schleichera oleosa</i> , <i>Butea monosperma</i>	Aug. 2015, Feb. 2020
Narsinghpur	Chichli (4), Gadarwara (1)	<i>Schleichera oleosa</i>	Aug., Dec. 2015, Jan. 2017
Hoshangabad	Bankhedi (7), Babai (1), Piparia (1)	<i>Schleichera oleosa</i>	Sep., Oct. and Dec. 2015
Betul	Chicholi (2), Multai (2)	<i>Butea monosperma</i>	Nov. 2015 and Nov. 2016
Chhindwara	Parasia (2), Jamai (3), Tamia (1), Jumnaradeo (3), Damua (1)	<i>Butea monosperma</i> , <i>Ziziphus mauritiana</i> , <i>Schleichera oleosa</i>	Nov. and Dec. 2015, July 16, June 19
Jabalpur	Kundam (1)	<i>Butea monosperma</i>	June 2016
Panna	Devendra Nagar (1)	<i>Butea monosperma</i>	June 2016
Raisen	Dehgaon (1)	<i>Schleichera oleosa</i>	Nov. 2016
Katni	Rethi (3), Bahoriband (1)	<i>Butea monosperma</i> , <i>Ziziphus xylopyra</i>	Sep. 2019

Panna, Raisen in one site (0.60%). Seoni, Balaghat and Mandla are the major lac producers of the state which contributes 81% of total lac production (Yogi et al., 2018). In the state traditionally lac insect is cultivated on *B. monosperma* and *S. oleosa* host plants. In Seoni district farmers mostly utilize *B. monosperma* host plants for brood lac production in Katki crop (rainy season) while in Baisakhi crop (winter season) they utilize *Z. mauritiana* for stick lac production. In case of Kusmi strain Bankhedi (Hoshangabad), Chichli (Narsinghpur), Mavai (Mandla) and Dindori have potential for producing good amount of Kusmi lac on *S. oleosa*, which is the abundant host plant. In cultivated condition all 167 sites reported crimson colour variants. District wise cultivated sites in Madhya Pradesh are given in Table 1 and 3.

Natural occurrence: Total 135 natural lac insect occurrence sites were found. In natural condition, about 70% lac insect occurrences were observed on *F. religiosa* in 35 districts of Madhya Pradesh. Maximum occurrence of lac insect was reported from Rajgarh,

Morena and Shivpuri districts in 8 sites (5.93%) followed by Sagar, Indore, Mandsaur, Agar Malwa in 6 sites (4.44%), 5 sites, (3.70%) Guna, Shajapur, 4 sites (2.96%) in Ashoknagar, Neemuch, Alirajpur and 3 sites (each 2.20%) in Umariya, Satna, Dewas etc. In Eastern part of Madhya Pradesh cultivated lac sites were found on major host *B. monosperma*, *S. oleosa*, *Z. mauritiana* while in western parts of Madhya Pradesh lac is mostly found scattered on few species only viz., *F. religiosa*, *F. rumphii*, *F. benghalensis* and *A. saman*. Some host plants dominant in specific region are *Zizyphus xylopyra* in Damoh and Katki, *F. rumphi* in Morena and Bhind, *A. saman* in Bhopal, Sagar and Sehore etc. In the natural condition, 69 sites reported with crimson colour lac insect, 62 sites with yellow and 4 sites reported with crimson-yellow mixed. The district wise natural sites of lac insect occurrence are given in Table 2 and 3.

Colour variations: Lac insect showing diverse body colour have been observed. Quantitative variations with regard to body colour had been reported varying from crimson, yellow and cream (Sharma et al., 2006) Colour

Table 2. Natural occurrence of lac insect in Madhya Pradesh

District	Block with lac insect occurrence sites	Host plants with lac encrustation	Survey period
Mandla	Bijadandi (1), Niwas (5), Mohgaon (3), Mavai (3)	<i>B.monosperma</i> , <i>Schleichera oleosa</i> , <i>Ziziphus mauritiana</i> , <i>F. racemosa</i> , <i>A. nilotica</i>	June 2015, May 2019
Harda	Timarni (1)	<i>Ficus religiosa</i>	Nov. 2015
Dindori	Shahpura (2), Dindori (1)	<i>F. religiosa</i> , <i>Z. mauritiana</i> , <i>Schleichera oleosa</i>	July 2016, Nov. 2019
Shahdol	Gohparu (1)	<i>Butea monosperma</i>	June 2015
Alirajpur	Alirajpur (1), Jobat (2), Kathewara (1)	<i>Ficus religiosa</i> , <i>Annona squamosa</i> , <i>A. lebbek</i>	Feb. 2016
Neemuch	Rampura (1), Neemuch (2), Manasa (1)	<i>Ficus religiosa</i>	Feb. 2016, Nov. 2019
Mandsaur	Mandsaur (2), Shamgarh (1), Dalonda (1), Bhanpura (1), Malhargarh (1)	<i>Ficus religiosa</i>	Feb. 2016 and Nov. 2019
Indore	Sanwer (1), Indore (1), Mhow (4)	<i>F. religiosa</i> , <i>Annona squamosa</i> , <i>B. monosperma</i>	Feb. 2016
Jhabua	Jhabua (1)	<i>Ficus religiosa</i>	Feb. 2016
Khandwa	Khandwa (1)	<i>Ficus religiosa</i>	July 2016
Khargone	Segaon (1), Bhikangaon (1)	<i>Ficus religiosa</i>	July 2016
Badwani	Rajpur (1)	<i>Ficus religiosa</i>	Nov. 2016
Dhar	Rajgarh (1), Sardarpur (1)	<i>Ficus religiosa</i>	July, Nov. 2016
Jabalpur	Jabalpur (3)	<i>B. monosperma</i> , <i>F. religiosa</i>	July 2016, June 2019
Sehore	Sehore (1), Asta (1)	<i>Ficus religiosa</i>	Nov. 2016
Dewas	Sonkach (2), Shipra (1)	<i>Ficus religiosa</i> , <i>A. saman</i>	Nov., Feb. 2016
Ratlam	Jaora (1)	<i>Ficus religiosa</i>	Feb. 2016
Narsinghpur	Chichli (1), Gadarwada (1)	<i>Ficus religiosa</i>	Jan. and Dec. 2017
Hoshanagabad	Hoshanagabad (1), Piparia (3)	<i>Ficus religiosa</i> , <i>Pithocobium dulce</i>	Dec. 2017, July 2018
Satna	Satna (1), Bela (1), Nagod (1)	<i>Ficus religiosa</i>	Oct., June 2017
Ashoknagar	Ashoknagar (2), Mungwani (1), Sadora (1)	<i>F. benghalensis</i> , <i>F. religiosa</i> , <i>Butea monosperma</i>	Jan. 2017
Rajgarh	Narsinghgarh (1), Pachore (2), Jirapur (3), Khailchipur (1), Sarangpur (1)	<i>Ficus religiosa</i>	Feb. 2017, May 2019
Guna	Binaganj (1), Maksudanganj (1), Kumbhraj (1), Guna (1), Rathihai (1)	<i>Ficus religiosa</i>	Jan., Feb. 2017
Chhatarpur	Lavkushnagar (1)	<i>Ficus religiosa</i>	Jan. 2017
Vidisha	Sironj(1), Vidisha (1)	<i>Ficus religiosa</i>	Feb. 2017
Burhanpur	Burhanpur (1), Ikchapur (1)	<i>Ficus religiosa</i>	July 2017
Rewa	Govindgarh (1), Rewa (1)	<i>Ficus religiosa</i>	Oct. 2017
Sidhi	Rampur (1), Sidhi (1)	<i>Ficus religiosa</i>	Oct. 2017
Sagar	Sagar (3), Rahatgarh (1), Garhakota (1), Bina (1)	<i>Ficus religiosa</i> , <i>A. saman</i>	June 2016 and Feb. 2017, May, Nov. 2019
Bhopal	Phanda (2)	<i>A. saman</i> , <i>Acacia nilotica</i>	June, July 2018
Anuppur	Anuppur (1)	<i>Ficus religiosa</i>	Oct. 2018
Umaria	Umaria (1), Nowrojabad (1)	<i>Butea monosperma</i>	Sep. 2019
Shivpuri	Shivpuri (4), Kolaras (3), Pohri (1)	<i>F. religiosa</i> , <i>F. amphissimma</i> , <i>F. benghalensis</i>	April and Nov. 2019
Morena	Morena (4), Jaora (2), Porsa (1), Ambah (1)	<i>Ficus religiosa</i> , <i>F. rumphi</i>	April 2019
Bhind	Bhind (1), Ater (1), Gohad (2)	<i>Ficus religiosa</i> , <i>F. rumphi</i> , <i>Ziziphus mauritiana</i>	April 2019
Gwalior	Gwalior (4)	<i>F. religiosa</i> , <i>F. racemosa</i>	April 2019
Agar Malwa	Agar (3), Nalkheda (1), Susner (1), Badod (1)	<i>F. religiosa</i> , <i>Acacia catechu</i>	May 2019
Shajapur	Shajapur (2), Kalapipal (1), Mohan Barodiya (1), Shujalpur (1)	<i>Ficus religiosa</i>	May 2019
Damoh	Jaora (1)	<i>Ficus religiosa</i>	May 2019

Table 3. District wise data of occurrence of lac insect in Madhya Pradesh

S.No.	District	Lac insect occurrence sites (Nos.)	Relative abundance (%)	Cultivated sites (Nos.)	Natural sites (Nos.)	Frequency of occurrence Cultivated sites (%)	Natural sites (%)
1	Seoni	49	16.2	49	-	29.3	-
2	Balaghat	39	12.9	39	-	23.40	-
3	Mandla	42	13.9	30	12	18.00	8.89
4	Dindori	08	2.65	05	03	2.99	2.22
5	Shahdol	06	1.99	05	1	2.99	0.74
6	Anuppur	05	1.66	04	1	2.40	0.74
7	Umaria	03	0.99	-	03	-	2.22
8	Katni	04	1.32	04	-	2.40	-
9	Jabalpur	04	1.32	01	03	0.60	2.22
10	Rewa	2	0.66	-	2	-	1.48
11	Panna	1	0.33	1	-	0.60	-
12	Sidhi	2	0.66	-	2	-	1.48
13	Satna	3	0.99	-	3	-	2.22
14	Sagar	6	1.99	-	6	-	4.44
15	Damoh	1	0.33	-	1	-	0.74
16	Bhopal	1	0.33	-	1	-	0.74
17	Raisen	1	0.33	1	-	0.60	-
18	Sehore	2	0.66	-	2	-	1.48
19	Vidisha	2	0.66	-	2	-	1.48
20	Hoshanagabad	13	4.30	9	4	5.39	2.96
21	Narsinghpur	7	2.32	5	2	2.99	1.48
22	Herda	1	0.33	-	1	-	0.74
23	Gwalior	4	1.32	-	4	-	2.96
24	Shivpuri	8	2.65	-	8	-	5.93
25	Bhind	4	1.32	-	4	-	2.96
26	Morena	8	2.65	-	8	-	5.93
27	Guna	5	1.66	-	5	-	3.7
28	Ashoknagar	04	1.32	-	4	-	2.96
29	Chatarpur	1	0.33	-	1	-	0.74
30	Indore	6	1.99	-	6	-	4.44
31	Mandsaur	6	1.99	-	6	-	4.44
32	Dhar	2	0.66	-	2	-	1.48
33	Neemuch	4	1.32	-	4	-	2.96
34	Dewas	3	0.99	-	3	-	2.22
35	Ratlam	1	0.33	-	1	-	0.74
36	Rajgarh	8	2.65	-	8	-	5.93
37	Agar Malwa	6	1.99	-	6	-	4.44
38	Shajapur	5	1.66	-	5	-	3.7
39	Chhindwara	10	3.31	10	-	5.99	-
40	Betul	4	1.32	4	-	2.40	-
41	Khargone	2	0.66	-	2	-	1.48
42	Khandwa	1	0.33	-	1	-	0.74
43	Badwani	1	0.33	-	1	-	0.74
44	Burhanpur	2	0.66	-	2	-	1.48
45	Jhabua	1	0.33	-	1	-	0.74
46	Alirajpur	04	1.32	-	4	-	2.96
Total		302	100.00	167.00	135.00	100.00	100.00

differences in lac insect are inherited as a unit character and crimson is dominant to yellow (Sharma et al., 2011). Colour variation were observed in 302 lac insect occurrence sites, and two colours crimson and yellow are common. Crimson lac insect was reported from 236 sites, yellow from 62 sites and crimson-yellow mixed from 4 sites. Crimson lac insect reported on Palas, Ber, Kusum, Pipal, Bargad, Jangli Jalebi jangli Bargad, Babul, Gular, Rain tree, Black Siris, Tendu and Ghont host plants whereas yellow lac insect were observed from Pipal, Sitaphal, Pakud, Bargad, Khair and Ber trees. Details of colour variations are given in Fig. 2.

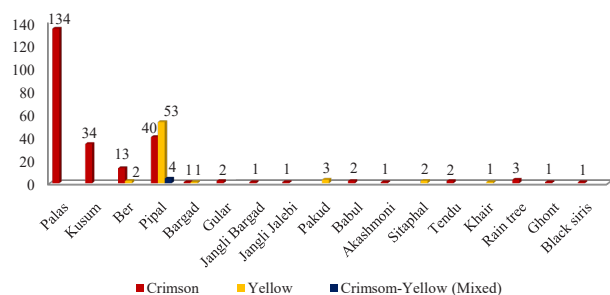


Fig. 2. Colour variation of lac insect on host plants in Madhya Pradesh

District wise analysis: On the basis of data given in Table 1 and 2, 302 sites from different districts of Madhya Pradesh revealed occurrence of lac insect, with maximum occurrence being from Seoni, 49 sites (16.2%) followed by Mandla, 42 sites (13.9%), Balaghat, 39 sites (12.9%), Hoshanagabad, 13 sites (4.3%), Chhindwara, 10 sites (3.31%), Dindori, Rajgarh, Morena, Shivpuri each 08 sites (2.65%), Narsinghpur, 7 sites (2.32%), Shahdol, Sagar, Indore, Mandsaur, Agar Malwa each 6 sites (1.99%), Anuppur, Guna, Shajapur each 5 sites (1.66%), Jabalpur, Katni, Gwalior, Bhind, Ashoknagar, Neemuch, Betul, Alirajpur each 4 sites (1.32%), Umaria, Satna, Dewas each 3 sites (0.99%), Rewa, Sidhi, Sehore, Vidisha, Dhar, Khargone, Burhanpur each 2 sites (0.66%) and minimum occurrence sites reported from Panna, Damoh, Bhopal, Raisen, Harda, Chhatarpur, Ratlam, Khandwa, Badwani, Jhabua each 1 sites (0.33%).

Host plants

The present study revealed that out of 302 locations of lac insect occurrence 267 belong to Rangeeni strain and 35 from Kusmi strain on 17 host plants. This work is in conformity with the findings of Meena et al. (2020) who reported lac occurrence on 14 host plants in western plains of India. Maximum frequency of occurrence was reported on *B. monosperma*- 133 sites (43.70%) followed by *F. religiosa*- 97 sites (32.5%),

S. oleosa- 35 sites (11.60%), *Z. mauritiana*- 15 sites (4.97%), Rain tree and Pakud in 3 sites (both 0.99), Tendu, Babul, Bargad and Gular 2 sites (each 0.66%) and least frequency was reported with, Khair, Ghont, Black siris, Jangli Jalebi, Jangli Bargad and Akashmoni (0.33%) each with only 1 site. Of these *B. monosperma*, *S. oleosa*, *Z. mauritiana*, *F. religiosa* are the major host plants which account for about 92.72% lac insect occurrence sites of Madhya Pradesh. Similar findings of Singh and Chatterjee (1994) reported *Z. mauritiana*, *B. monosperma* and *F. religiosa* as the major lac hosts.

The study reveals that the occurrence of lac insect in different districts of Madhya Pradesh is of significant importance as these are habitats of important lac host plant on which lac insect thrives cultivated and found naturally. During the study lac encrustation was found on 17 host plants, and in view of abundant availability of host plants in farmer's field and forest areas, lac cultivation has great scope in the region and this biodiversity could be better utilized for the its conservation. In the present study good lac encrustations were found on Kusum, Palas, Ber, Pipal, Jangli Jalebi, Rain tree, Kala siris, Ghont, Pakud in different parts of Madhya Pradesh. Occurrence of both Kusmi and Rangeeni lac insect indicated the climate suitability of lac cultivation in surveyed areas. The study aims for in-situ conservation, multiplication and cultivation of lac insect and host plants in the local area, through on farm trials and demonstration. District wise collection and maintenance need to be continued for conserving valuable lac associated faunal and floral diversity of Madhya Pradesh. Effort should be made for the conservation of local hosts and strains of lac insect and popularizing the lac cultivation in non lac growing areas of Madhya Pradesh.

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