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## Comparative performance of different host plants of lac insect *Kerria lacca* (Kerr). At Kanker district of Chhattisgarh

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**Abstract**

Comparative performance of different host plants of lac insect *Kerria lacca* (Kerr) during 2015-16 and 2016-17 at Kanker district of Chhattisgarh. During study investigate the brood lac inoculation (BLI) and productivity parameters on different host plants viz. palas (*B. monosperma*) and ber (*Z. mauritiana*) for *rangeeni*, *katki* (rainy) and kusum (*S. oleosa*) and semialata (*F. semialata*) for *kusmi*, *aghani* (winter) strain. The highest mean number of stick lac 244.40 per plant with mean length of stick lac 56.12 cm per stick lac, maximum mean fresh weight of stick lac 49.88 g per 30 cm length of stick lac, maximum mean weight of scraped lac 21.72 g per 30 cm stick lac, maximum mean weight of raw stick lac 59.25 kg per plant, highest mean weight of fresh and dry weight of 100 lac cells 8.68 and 7.16 g and yield potential 7.89 on kusum host in *kusmi*, *aghani* (winter) strain. But maximum mean length of stick lac 90.88 cm per stick lac and highest yield potential 8.33 was recorded on ber host plant in *rangeeni*, *katki* (rainy) strain. Among the different host plants kusum was found best host plant in *kusmi* strain for commercial lac production viz. Maximum number of stick lac, highest number of larval settlement and maximum cost benefit ratio with (3.97). While ber (*Z. mauritiana*) was performed highest mean length of stick lac 90.88 and highest yield potential 8.33 in *rangeeni*, *katki* (rainy) strain.

**Keywords:** Yield potential, lac insect *Kerria lacca* Kerr

**Introduction**

Lac is one of the most valuable gifts of nature to man, the only resin of animal origin secreted by a tiny scale insect, belonging to the family Tachardiidae, superfamily Coccoidea of the order Hemiptera (Pal, 2009; Mohanta *et al.*, 2012) <sup>[15, 10]</sup>. Family Tachardiidae consists of 9 genera, while the number of species reported vary from 87 (Sharma and Ramani, 1999) <sup>[19]</sup>, 90 (Varshney, 2009) <sup>[23]</sup> to 100 species (Ben-Dov and Lit, 1998) <sup>[1]</sup>. Two genres are found in India, while genus commercially important as it has 19 species of industrial importance (Sharma and Ramani, 1999) <sup>[19]</sup>.

Lac product is the subsidiary source of income for rainfed farmers mainly in parts of Jharkhand, West Bengal, Madhya Pradesh, Chhattisgarh, Maharashtra, Andhra Pradesh (Ogle and Thomas, 2006; Ramani, 2010) <sup>[14, 17]</sup>. India with an annual lac production of 20,000 metric tons is the largest producer of lac in the world, contributing to about 50 to 60 per cent of the world's lac production (Glover, 1937) <sup>[3]</sup>. Thailand, Indonesia, Burma, China are the other lac producing countries (Chamberlin, 1923) <sup>[2]</sup>. Besides Lac resin and wax, lac dye is also of commercial importance (Kapoor, 2002) <sup>[5]</sup>. Worldwide, collection and sales of Non-wood forest produce (NTFPs) form an important livelihood activity especially among the forest dependent communities and people in rainfed areas. In India over 50 per cent of the forest revenues and 70 per cent of the forest export income comes from NTFPs (Shiva, 1993) <sup>[21]</sup>. Among these resins and gums form an important group of product in the portfolio of NTFPs that fetch premium price at national and international level (Mulugeta *et al.*, 2003) <sup>[11]</sup>.

The lac insects thrive on the sap of certain plants called lac hosts. So far, over 400 species of plants have been recorded as hosts of which those are of importance from the commercial point's are- palas (*Butea monosperma*), kusum (*Schleichera oleosa*) and ber (*Zizyphus mauritiana*). Other important lac host plants are khair (*Acacia catechu*), ghont (*Zizyphus xylopyra*), barh (*Ficus bengalensis*), peepal (*Ficus religiosa*), arhar (*Cajanus Cajan*), galwang (*Albizia lucida*), semialata (*Flemingia semialata*) etc. (Sharma *et al.*, 1997; Kumar *et al.*, 2007) <sup>[20, 7]</sup>.

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Chhattisgarh is the major lac cultivated area in all over the India. Kanker is the major lac cultivated area and second largest production after Korba in Chhattisgarh. The people of this district using major host such as kusum (*Schleichera oleosa*), palas (*Butea monosperma*), ber (*Zizyphus mauritiana*) and semialata (*Flemingia semialata*). Looking to the above fact present study is aimed to investigate the comparative performance and host potentiality of different host plants in Kanker district of Chhattisgarh.

### Material and Methods

The experiment was carried out in Randomized Block Design (RBD) with the five replications, each replication five plants was selected. To record the potential of different host plants (kusum, palas, ber and semialata) of lac insect for the lac production of different seasons namely *rangeeni*, *katki* (rainy) and *kusmi*, *aghani* (winter) crops for the commercial lac yield of different parameters viz. brood lac inoculation and productivity parameters, was performed during 2015-16 and 2016-17 at Kanker district of Chhattisgarh.

### Brood lac inoculation

Required healthy brood lac weighing from 46.60 g to 7550 kg per tree of different host plant viz. palas (*B.monosperma*), ber (*Z.mauritiana*), kusum (*S.oleosa*) and semialata (*F.semialata*). The data of required brood lac was presented in Table no 1, quantity of brood lac was depending upon the size of the tree, brood lac was make the bundled of 50 to 100 g each bundles and inoculated in the both seasons of *rangeeni* (*katki*) and *kusmi* (*aghani*) during 2015-16 and 2016-17.

**Table 1:** Brood lac required for inoculation on different host plants during 2015-16 and 2016-17.

Strain	Host plants	Mean weight of lac per plant (g)		
		2015-16	2016-17	Pooled mean
Rangeeni	Palas	582.00	590.00	586
	Ber	718.00	700.00	709
Kusmi	Kusum	7120.00	7980.00	7550
	Semialata	46.80	46.40	46.6
S.Em.±		118.69	115.81	
C.D. at 5 %		365.74	356.87	

### Productivity parameters

Potentiality of different host plants was observed in terms of different productivity parameters, Viz. number of stick lac per plant, length of stick lac per plant (cm), fresh weight of stick lac per 30 cm of length in (g), weight of scraped lac per 30 cm stick lac in (g), weight of stick lac per plant (kg), fresh weight of 100 lac cells (g) and dry weight of 100 lac cells (g) was recorded with the help of Electronic balance at the time of harvest. The potential of yield was calculated of the following formula.

$$\text{Yield potential} = \frac{\text{Total raw lac per tree (g)}}{\text{Total inoculated brood lac per tree (g)}}$$

### Results and Discussion

#### Brood lac inoculation (BLI)

The process transfer of crawling larvae of *Kerria lacca* (Kerr.) from brood lac to succulent branches of host tree is called brood lac inoculation (BLI) the brood lac inoculation was done on palas, ber, *rangeeni* (*katki*), kusum, and semialata *kusmi*, (*aghani*), with the mean brood lac weight of

582, 718, 7120 and 46.80 g. respectively during July 2015. Similarly, during July 2016, the brood lac inoculation was done on palas, ber, kusum, and semialata, with the mean weight of brood lac 590, 700, 7980, and 46.40 g. respectively. The data of required brood lac was presented in Table no.1. The pooled mean brood lac inoculation of different host plants was varied from 46.60 g to 7550 kg in the strain, *rangeeni* and *kusmi*. There was a significant difference in the mean weight of brood lac inoculation on different host plants. The brood lac inoculation per plant was highest in *kusmi*, strain during the year 2015-16 and 2016-17 on kusum (*S.oleosa*) host plant.

This finding was agreement with Kumar *et al.*, (2015) [6] reported the requirement of brood lac for different host plant is differed due to its size, normally required on kusum 5 kg, ber 1.5 kg, palas 0.75-1.0 kg and semialata needed 40-50 g brood lac. Meshram (2018) [9] reported that 0.556, 0.466, 7916 and 46.92 g brood lac used for palas, ber, kusum, and semialata respectively. In the present studies, 0.586, 0.709, 7550 kg and 46.60 g brood lac was used for palas, ber, kusum, and semialata respectively. The requirement of the brood lac inoculation depended on the size and cut point branches of the different host plants. The result revealed that the *S.oleosa* plant required high amount of brood lac inoculation as compare to other host plants, because of large size, canopy and more number of branches per plant.

#### Productivity parameters of lac insect on different host plants for potential yield.

##### Number of stick lac

Productivity parameter of lac insect on different host plants for potential yield was presented in Table no.2, the mature lac insect *Kerria lacca* (Kerr.) encrustation twigs of host tree which are ready to harvest are called stick lac. The mean number of stick lac was recorded during 2015-16, varied from 11.56 to 245.32 per plants was presented in table no. 4.4 & fig.4.7. The maximum mean number of stick lac was recorded on kusum (245.32) and semialata (11.56) host plants in *kusmi* strain, while maximum on ber (36.38) and palas (24.36) host plants in *rangeeni* strain. Similarly during the year 2016-17, the mean number of stick lac was varied from 10.56 to 243.48 per plant. The maximum number of stick lac was recorded on kusum (243.48) and semialata (10.56) host plant in *kusmi* (*aghani*) strain. Whereas in *rangeeni* (*katki*) strain, maximum on ber (37.40) and palas (24.44) host plants. Based on pooled mean number of stick lac varied from 11.06 to 244.40 per plant. The maximum number of stick lac was recorded on kusum (244.40) and semialata (11.06) host plant in *kusmi* (*aghani*) strain. While in maximum on ber (36.54) and palas (24.40) host plants in *rangeeni* (*katki*) strain.

Similar finding by Janghel (2013) [4] reported that the mean number of lac stick per tree at harvest varied from 14 to 41.33 in *rangeeni* strain with palas tree. Palel *et al.*, (2014) evaluated that 22-50 mean number of stick lac in *kusmi* strain and 15-32 in *rangeeni* strain in ber host plant. Suggested that were more number in case of *kusmi* as compared to *rangeeni* lac. Namdev (2014) [12] reported that mean number of stick lac varied from 13.16 to 18.00 in *kusmi* strain in ber host plant. Sahu (2016) [18] reported that the mean number of lac stick per tree varied from 16.44 to 22.00 in *rangeeni* with palas host plant with harvest. Meshram (2018) [9] reported that the mean number stick lac varied from 10.93 to 237.91. The highest lac stick was found on kusum 237.91 followed by ber, palas and semialata with 35.00, 25.65 and 10.93 lac stick per plant in

both the strain, respectively. Their findings are similar to present investigation the variation in number of stick lac was probably due to the variation in size, canopy and succulent branches of host plants. The maximum number of stick lac was recorded in kusum due to longer size and canopy and lowest in semialata because it was bushy and smallest host plant than the kusum, ber and palas host tree.

### Length of stick lac (cm)

The mean length of stick lac was recorded during 2015-2016, varied from 54.85 to 88.39 cm per plant, the maximum mean length of stick lac was recorded on ber (88.39) and palas (54.85) host plant in *rangeeni* strain. Whereas the maximum mean length of stick lac was on semialata (58.12) and kusum (55.12) host plant in *kusmi* strain. Similarly the mean length of stick lac was varied from 57.76 to 93.36 cm per plant, during the year 2016-17. The maximum mean length of stick lac was recorded on ber (93.36) and palas (57.76) cm per host plant in *rangeeni* strain. Whereas the maximum mean length of stick lac was recorded on semialata (63.18) cm and kusum

(57.11) cm per host plant in *kusmi* strain. Based on pooled mean length of stick lac cm per host plant varied from 56.12 to 90.88 cm. The maximum length of stick lac was recorded on ber (90.88 cm) and palas (56.31) cm per host plant in *rangeeni* strain. While the maximum length of stick lac was recorded on semialata (60.65) cm and kusum (56.12) cm per host plant in *kusmi* strain.

Present finding are more or less conformity to Janghel (2013)<sup>[4]</sup> evaluated that the length of lac stick per plant varied from 750 to 1530 cm on palas host plant in *rangeeni* strain, which was higher than the present finding. According to Sahu (2016)<sup>[18]</sup> reported that mean length of lac stick was 68.66 to 77.56 cm in palas *rangeeni* (*katki*) strain. Meshram (2018)<sup>[9]</sup> evaluated that the mean length of lac stick per tree was 88.42 cm in ber followed by semialata, palas and kusum with 61.34, 53.92 and 52.14 cm lac stick per host plant in *rangeeni* and *kusmi* strain respectively. These finding was similar to the present studied, the length of stick lac depended on the availability of succulent branches of host plant and quality of food for good settlement of lac insect larvae.

**Table 2:** Productivity parameters of lac insect *Kerria lacca* (Kerr.) on different host plants during 2015-16 and 2016-17.

Strain	Host plants	Productivity parameters							
		No. of stick lac/plants	Mean length of stick lac (cm)	Fresh weight of 30 cm stick lac (g)	Weight of scraped lac / 30 cm stick lac (g)	Weight of stick lac per plants (kg)	Fresh weight of 100 lac cells (g)	Dry weight of 100 lac cells (g)	Yield potential (Ratio of total raw lac and inoculated brood lac)
<b>2015-16</b>									
Rangeeni	Palas	24.36 (4.94)	54.85	34.27	14.01	2.83	5.07	3.78	4.81
	Ber	35.68 (5.97)	88.39	45.79	18.89	6.09	7.32	6.11	8.10
Kusmi	Kusum	245.32 (15.66)	55.12	48.95	20.89	56.53	8.54	7.15	7.99
	Semialata	11.56 (3.40)	58.12	41.73	17.12	0.30	7.11	6.14	6.42
S.Em.±		1.46	2.16	0.65	0.31	0.90	0.31	0.17	0.08
C.D. at 5%		4.50	6.64	2.00	0.97	2.78	0.94	0.53	0.26
<b>2016-17</b>									
Rangeeni	Palas	24.44 (4.94)	57.76	36.27	15.49	2.93	6.14	4.56	4.92
	Ber	37.40 (6.12)	93.36	48.28	19.89	5.97	7.89	6.47	8.55
Kusmi	Kusum	243.48 (15.60)	57.11	50.81	22.54	61.96	8.82	7.16	7.79
	Semialata	10.56 (3.25)	63.18	43.78	18.75	0.31	7.89	6.61	6.57
S.Em.±		1.07	1.12	0.72	0.26	0.49	0.25	0.18	0.17
C.D. at 5%		3.28	3.46	2.22	0.80	1.50	0.79	0.57	0.51
<b>Pooled</b>									
Rangeeni	Palas	24.40 (4.94)	56.31	35.27	14.75	2.88	5.61	4.17	4.87
	Ber	36.54 (6.04)	90.88	47.04	19.39	6.03	7.61	6.29	8.33
Kusmi	Kusum	244.40 (15.63)	56.12	49.88	21.72	59.25	8.68	7.16	7.89
	Semialata	11.06 (3.33)	60.65	42.76	17.94	0.30	7.50	6.38	6.50

**Note:** Figures in parentheses are root square transformed value

### Weight of 30 cm stick lac (g)

The fresh weight of 30 cm per stick lac was recorded 2015-16, varied from 34.27 to 48.95 g per plants. The maximum mean fresh weight of 30 cm stick lac was recorded on kusum (48.95) and semialata (41.73 g) per host plant in *kusmi* strain, whereas the maximum mean fresh weight of 30 cm stick lac was recorded on ber (45.79) g and palas (34.27 g) per host plant in *rangeeni* strain. Similarly during the year 2016-17, the mean weight of 30 cm stick lac was varied from 36.27 to 50.81 g per plants, the maximum mean fresh weight of 30 cm length stick was recorded on kusum (50.81 g) and semialata (43.78) per host plant in *kusmi* strain. Whereas the mean weight of 30 cm length stick was recorded on ber (48.28 g) and palas (36.27 g) per host plant in *rangeeni* strain. Based on pooled mean fresh weight of 30 cm per stick lac varied from 35.27 to 49.88 g per plant. The maximum mean fresh weight of 30 cm stick lac was recorded on ber (47.04 g) and palas

(35.27) g per host plant in *rangeeni* strain. While the maximum fresh weight of 30 cm stick lac was recorded on kusum (49.88) g and semialata (42.76) g per host plant in *kusmi* strain.

Present finding are conformity with Janghel (2013)<sup>[4]</sup> reported that mean weight of 30cm lac stick varied from 28.74 to 58.91 g in *rangeeni* on palas at harvest. Similarly to Patel *et al.* (2014)<sup>[16]</sup> reported that mean weight of 30cm lac stick varied from 24.26 to 80.59 g on *kusmi* strain and 21.86 to 76.00 g in case of *rangeeni* strain on ber host plant. Namdev (2014)<sup>[12]</sup> reported that mean weight of lac stick per 30cm varied from 16.88 to 92.03 g in *kusmi* strain on ber. Meshram (2018)<sup>[9]</sup> reported that fresh mean weight of lac stick per 30 cm stick varied from 33.96 to 47.68 g per 30 cm stick. The Mean weight of lac stick was highest on kusum with 47.68 g followed by ber, semialata and palas with 44.21, 42.20 and 33.96 g per 30 cm stick in both the strain these finding are

similar to present studied.

### Weight of scraped lac (g)

The fresh weight of scraped lac from 30cm length stick lac was recorded, which was varied from 14.01 to 20.89 g per plant, during 2015-16. The maximum mean fresh weight of scraped lac from 30cm stick was recorded on kusum 20.89 g and semialata 17.12 g per host plant in *kusmi* strain, whereas the maximum mean fresh weight was recorded on ber 18.89 g and palas 14.01 g per host plant in *rangeeni* strain. Similarly the mean fresh weight of scraped lac from 30 cm length stick was varied 15.49 to 22.54 g per plant. The maximum mean fresh weight of scraped lac from 30 cm length stick was recorded on kusum 22.54 g and semialata 18.75 g per host plant in *kusmi* strain. Whereas the maximum mean fresh weight of scraped lac from 30 cm length stick was recorded on ber (19.89) g and palas (15.49 g) per host plant in *rangeeni* strain, during the year 2016-17, Based on pooled mean fresh weight of scraped lac from 30 cm length stick per plant varied from 14.75 to 21.72 g per host plant. The maximum was recorded on kusum 21.72 g and semialata 17.94 g per host plant in *kusmi* strain. While it was maximum on ber 19.39 g and palas 14.75 g per host plant in *rangeeni* strain.

The finding are more or less similar to those of Patel *et al.* (2014) [16] who reported that mean weight of raw lac per 30 cm length stick varied from 12.43 to 48.04 g in *kusmi* and 7.54 to 22.37 g in *rangeeni* strain, more raw lac was found in *kusmi* than in *rangeeni*. The mean weight of scraped lac was higher in *kusmi* and lower in *rangeeni*. Meshram (2018) [9] reported that the mean fresh weight of scraped lac from 30 cm length stick varied from 16.06 to 23.96 g. the mean fresh weight of scraped lac was highest on kusum with 23.96 g followed by ber, semialata and palas with 22.49, 20.51 and 16.06 g in both the strains respectively.

### Yield of raw stick lac (per plant)

The mean yield of stick lac per plant was recorded during 2015-16 varied from 0.30 to 56.53 kg per plant. The maximum mean yield of stick lac was recorded on kusum (56.53) and semialata (0.30) kg per host plant in *kusmi* strain, whereas the minimum was recorded on ber (6.09) and palas (2.83) kg per host plant in *rangeeni* strain. There was significant difference in yield of raw lac on different host plants. The main yield of stick lac was varied 0.31 to 61.96 kg per host plant, the maximum main yield of stick lac was recorded on kusum (61.96) and semialata (0.31) kg per host plant in *kusmi* strain, while the maximum mean yield of stick lac was recorded on ber (5.97) and palas (2.93) kg per host plant in *rangeeni* strain during the year 2016-17,. There was significant difference in yield of raw lac on different host plants. Showed that the two year pooled mean yield of stick lac was varied from 0.30 g to 59.25 kg per host plant. The maximum mean yield of stick lac was recorded on kusum (59.25) and semialata (0.30) kg per host plant in *kusmi* strain. Whereas the minimum was recorded on ber (6.03) and palas (2.88) kg per host plant in *rangeeni* strain.

The findings of more or less similar to Patel *et al.* (2014) [16] reported that the yield of lac per plant recorded 4.00 to 5.70 kg *kusmi* strain and 3.20 to 4.55 kg in *rangeeni* strain on ber host plant. Sharma and Ramani (2010) [17] also reported average yield of stick lac on palas (1.2 to 2.8 kg) in *rangeeni* and kusum (10 to 100 kg) and ber (3.00 to 12.00 kg) in *kusmi*. Singh *et al.* (2015) [6, 22] reported 120 kg brood lac yield recorded from 400 semialata host plant in *kusmi* strain.

Meshram (2018) [9] reported that mean yield of stick lac per plant varied from 0.305 to 54.94 kg per plant. The yield of raw lac per plant was maximum on kusum with 54.94 kg per plant followed by semialata 0.305 kg in *kusmi* strain and ber with 5.32 kg per plant followed by palas 3.72 kg in *rangeeni* strain.

### Fresh weight of 100 lac cells (at harvest)

The mean fresh weight of 100 lac cell was recorded which varied from 5.07 to 8.54 g. The maximum mean fresh weight of 100 lac cell was recorded on kusum (8.54) and semialata (7.11) g in *kusmi* strain, during 2015-16. It was maximum mean fresh weight of 100 lac cell was recorded on ber (7.32) and palas (5.07) g in *rangeeni* strain. There was significant difference in the mean fresh weight of 100 lac cells on different host plants. The mean fresh weight of 100 lac cell was varied from 6.14 to 8.82 g, during the year 2016-17. The maximum mean fresh weight of 100 lac cell was recorded on kusum (8.82) and semialata (7.89) g in *kusmi* strain,. Whereas the maximum mean fresh weight of 100 lac cell was recorded on ber (7.89) and palas (6.14) g in *rangeeni* strain. There was significant difference in the mean fresh weight of 100 lac cells on different host plants. Two year pooled mean fresh weight of 100 lac cell was varied from 5.61 to 8.68 g. The maximum was recorded on kusum (8.68) and semialata (7.50) g in *kusmi* strain. While the maximum mean fresh weight was recorded on ber (7.61) and palas (5.61) g in *rangeeni* strain.

The present finding are agreement with Namdev *et al.* (2015) [13] reported that mean fresh weight of lac cell varied from 6.14 to 8.02 g in *kusmi* strain on ber at harvest. Kumar *et al.* (2017) reported that the mean fresh weight of 100 lac cell varied from 6.36 to 11.14 g at harvest in *rangeeni* strain on ber host plant. Meshram (2018) [9] reported that the mean fresh weight of 100 lac cell varied from 4.09 to 7.31 g. The mean fresh weight of 100 lac cell was highest 7.31 g on kusum followed by semialata 6.52 g in *kusmi* strain and 6.73 g on ber followed by palas 4.09 g in *rangeeni* strain.

### Dry weight of 100 lac cells

The mean dry weight of 100 lac cell was recorded during 2015-16, varied from 3.78 to 7.15 g. The maximum mean dry weight of 100 lac cell was recorded on kusum (7.15) and semialata (6.14) g in *kusmi* strain. While the maximum mean dry weight of 100 lac cell was recorded on ber (6.11) and palas (3.78) g in *rangeeni* strain presented in table no.2. There was significant difference in the mean dry weight of 100 lac cells on different host plants. Similarly during the year of 2016-17, the mean dry weight of 100 lac cell was varied from 4.56 to 7.16 g. The maximum mean dry weight of 100 lac cell was recorded on kusum (7.16) and semialata (6.61) g in *kusmi* strain. Whereas the maximum mean dry weight of 100 lac cell was recorded on ber (6.47) and palas (4.56) g in *rangeeni* strain. There was significant difference in the mean dry weight of 100 lac cells on different host plants. Based on two years pooled mean dry weight of 100 lac cell was varied from 4.17 to 7.15 g. The maximum mean dry weight of 100 lac cell was recorded on kusum (7.15) and semialata (6.38) g in *kusmi* strain. While the maximum mean dry weight of 100 lac cell was recorded on ber (6.29) and palas (4.17) g in *rangeeni* strain.

Present findings are more or less similar to Namdev *et al.* (2015) [13] reported that the mean dry weight of 100 lac cell varied from 4.25 to 7.84 g in *kusmi* strain on ber. Patel *et al.* (2014) [16] reported that mean dry weight of 100 la cell varied

from 2.56 to 5.40 g in *kusmi* and 1.79 to 3.42 g in *rangeeni* strain. Kumar *et al.*, (2017)<sup>[8]</sup> also reported that the mean dry weight of 100 lac cell varied from 4.95 to 8.21 g in *rangeeni* strain on palas at harvest. Meshram (2018)<sup>[9]</sup> reported that the mean dry weight of 100 lac cells varied from 3.72 to 6.86 g. The mean dry weight of 100 lac cells was highest 6.86 g on kusum followed by semialata 5.87 g in *kusmi* strain, while 6.02 g on ber followed by palas 3.72 g in *rangeeni* strain.

#### 4.1.4.9 Yield potential (ratio of total raw lac yield and inoculated brood lac)

The yield potential of different host plant was recorded which (Ratio between total raw lac and inoculated brood lac) varied from 4.81 to 8.10, during 2015-16. The maximum mean yield potential was recorded on ber (8.10) and palas (4.81) in *rangeeni* strain, while maximum was recorded on kusum (7.99) and semialata (6.42) in *kusmi* strain, data presented in table 2. The mean yield potential of different host plant was varied from 4.92 to 8.55. The maximum mean yield potential was recorded on ber (8.55) and palas (4.92) in *rangeeni* strain, while maximum yield potential was recorded on kusum (7.79) and semialata (6.57) in *kusmi* strain during the year 2016-17. Based on pooled mean yield potential was varied from 4.87 to 8.33. The maximum mean yield potential was recorded on ber 8.33 and palas 4.87 in *rangeeni* strain. Whereas yield potential was recorded maximum on kusum 7.89 and semialata 6.50 in *kusmi* strain.

Similar trends of result by Kumar *et al.*, (2007)<sup>[7]</sup> reported that the ber as the best host for lac production as maximum quantity was recorded on it (160.50 g/m). More or less similar findings was reported by Singh *et al.* (2015)<sup>[6, 22]</sup> reported that brood lac ratio of *F.semialata* varied from 1:3.8 in bokaro (Jharkhand) to 1:9 in Patna (Bihar) with mean brood lac yield ratio of 1:5.5 it was 1:6 in Chhattisgarh state. Meshram (2018)<sup>[9]</sup> reported that the mean yield potential of different host plant varied from 6.27 to 11.01. The yield ratio was highest 11.01 on ber followed by palas 6.83 in *rangeeni* strain, followed by kusum and semialata with 7.01 and 6.27 in *kusmi* strain.

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