



HOST PREFERENCE BY RED BANDED MANGO CATERPILLAR *DEANOLIS ALBIZONALIS* (HAMPSON)

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ABSTRACT

Red banded mango caterpillar (RBMC) *Deanolis*(=*Autocharis*) *albizonalis* Hampson (Crambidae: Lepidoptera) is a serious threat to mango cultivars at Sabour and adjoining areas of Bihar. The field preference by RBMC in 23 cultivars was evaluated in this study. The results revealed that infestation varied from 0- 32.1%, with Amrapali and Kalapady being free, and Langara having >30% infestation. Among the biophysical traits, the distance from tip of the stone to distal end of the fruit, and the peel thickness are the two most important factors responsible for preference/ non preference by caterpillars of RBMC.

Key words: *Deanolis*(=*Autocharis*) *albizonali*, mango, Sabour, Bihar, host preference, cultivars, biophysical factors, infestation level, peel thickness

Mango (*Mangifera indica*: Anacardiaceae), is one of the most important fruit crops of India, and is considered as national fruit of India. According to Waterhouse (1998), Red banded mango caterpillar (RBMC), *Deanolis*(=*Autocharis*) *albizonalis* Hampson (Crambidae: Lepidoptera) is a potential threat to mango and it is widely distributed throughout India, Burma, Thailand, China, Brunei, Philippines, Indonesia, Papua New Guinea and Australia (Anonymous, 2004.) From West Bengal, Jha and Sarkar (1991) reported it from Malda during a survey of Malda and Murshidabad districts. Sahoo and Das (2004) observed April-May as favourable for the RBMC, and loss can be from 4 to 42%. During last three years, the RBMC has been continuously observed at Sabour and adjoining areas. In the present study, 23 mango cultivars have been screened to observe the host preference and to find out the biophysical factors responsible.

MATERIALS AND METHODS

During first fortnight of May, 2018, observations based on symptom in fruits were made on the 23 mango cultivars at the BAU Research Farm, Sabour (25°13'53.9256" N; 87°2'45.6792" E). The fruits having tip infestation symptom (bore hole at the tip of fruits) were considered as the as infested. Single tree belonging to each cultivar was observed and total sampled fruits included the well visible fruits from a single direction. Fruits collected were brought to the laboratory after which longitudinal section into two

equal halves of those were done using a locally made cutter. The biophysical parameters like fruit length (mm), maximum width of fruit (mm), stone length (mm), stone width (mm), distance from tip of the stone to distal end of the fruit (mm) and peel thickness (mm) were measured using digital carbon fibre calliper. The % infestation and its correlation with the biophysical parameters were calculated in MS Excel.

RESULTS AND DISCUSSION

Infestation of fruits by RBMC along with physical parameters is presented in Table 1. These indicate that the cultivar Langarahad maximum (32.1%) infestation, while Amrapali and Kalapady were found to be free. Physical parameters of the fruits like length and width of fruits, length and maximum width of stone, distance from tip of the stone to distal end of the fruit and thickness of peel were measured and correlated with infestation. The parameters like length and maximum width of fruits, length and maximum width of stone were not observed to be significantly correlated, but distance from tip of the stone to distal end of the fruit and thickness of peel were significantly negatively correlated ($r=-0.92$ and -0.89 , respectively).

In cultivars like Amrapali, Kalapady, Pantu, Dasher, Mundappa, Kalaster, and Zardalu the distance from tip of the stone to distal end of the fruit varied from 8.02 ± 0.78 to 14.44 ± 1.37 whereas in cultivars like Himsagar, Barmasia, Raspur, Abe hayat, Benazir, Gulab Khas,

Table 1. Infestation of mango cultivars by RBMC, and biophysical factors

Cultivars	Total observed fruits	RBMC infested fruits	% Infestation	Fruit length (mm)	Maximum width of fruit (mm)	Stone Length (mm)	Stone Width (mm)	Distance from tip of the stone to distal end of the fruit (mm)	Peel Thickness (mm)
Abe hayat	250	58	23.20	81.88±3.26	61.30±1.63	57.47±3.70	32.12±0.41	7.24±0.10	0.74±0.02
Amrapali	59	0	0.00	97.86±4.20	60.54±2.39	76.92±3.47	30.98±1.47	14.44±1.37	1.42±0.10
Badshah Pasand	59	17	28.80	87.95±1.84	58.54±1.32	63.42±4.28	29.15±0.95	6.06±0.10	0.55±0.05
Banazir	111	27	24.30	89.20±4.76	63.24±2.57	65.44±5.80	32.49±2.71	6.37±0.63	0.68±0.04
Barbariya	140	21	15.00	59.36±4.00	46.42±1.95	47.00±2.20	28.56±2.68	7.30±0.21	0.82±0.02
Barmasia	125	28	22.40	104.43±8.22	64.33±5.33	81.08±11.14	41.65±21.52	7.34±0.15	0.88±0.08
Chausa	111	19	17.10	101.89±3.80	65.85±6.85	81.82±2.85	37.68±0.62	8.34±0.18	0.77±0.08
Dasheri	121	4	3.30	85.28±2.55	56.35±1.17	67.54±2.09	26.88±3.46	9.63±0.49	1.15±0.06
Fazli	61	17	27.90	131.99±4.73	83.27±4.77	96.59±11.34	36.73±3.02	6.13±0.10	0.61±0.06
Gulab Khas	103	26	25.20	107.23±1.77	80.73±0.56	76.06±3.50	44.70±0.51	6.32±0.20	0.67±0.05
Himsagar	106	22	20.80	99.68±1.90	78.95±0.41	74.40±1.98	44.67±1.51	7.63±0.46	0.81±0.06
Husnara	48	14	29.20	83.35±0.99	47.85±2.29	69.90±2.04	28.59±3.09	6.04±0.19	0.60±0.11
Kalapady	54	0	0.00	70.99±0.75	55.27±1.43	51.10±0.44	29.41±1.24	12.68±0.45	1.21±0.03
Kalaster	56	5	8.90	74.48±2.42	58.15±0.90	54.51±3.69	29.10±1.63	9.30±0.08	1.01±0.02
Langara	224	72	32.10	85.36±0.97	65.55±2.00	68.36±2.69	37.48±2.60	5.36±0.36	0.36±0.05
Latra	65	8	12.30	59.87±2.87	55.17±3.16	42.08±2.54	27.12±5.19	8.18±0.52	0.85±0.02
Mundappa	238	17	7.10	71.15±1.17	62.61±0.85	48.93±1.43	34.17±3.15	9.58±0.48	0.77±0.09
Pantu	95	3	3.20	77.98±3.42	74.39±2.84	52.15±1.79	29.30±1.23	11.91±0.36	1.05±0.04
Raspur	71	16	22.50	67.76±2.30	55.25±0.93	48.93±0.48	27.38±0.67	6.65±0.59	0.72±0.02
SafedaMalihabadi	148	44	29.70	65.97±0.73	43.78±1.98	51.72±2.55	25.83±1.19	5.69±0.30	0.38±0.05
Sinduriya	73	21	28.80	92.37±3.62	62.22±1.67	69.49±4.48	30.73±4.42	6.02±0.09	0.56±0.04
Sipiya	101	27	26.70	76.28±0.94	54.89±1.89	61.48±2.54	30.891±.52	6.10±0.15	0.80±0.08
Zardalu	96	9	9.40	78.78±1.50	56.65±1.98	58.59±1.58	31.45±2.45	8.02±0.78	0.85±0.04

Sipiya, Fazli, Badshah Pasand, Sinduriya, Husnara Safeda Malihabadi and Langarait varied from 5.36 ± 0.36 to 7.63 ± 0.46 . The peel thickness in the cultivars (Amrapali, Kalapady, Pantu, Dasher, Mundappa, Kalaster, and Zardalu) having 0-10% infestation ranged from 0.77 ± 0.09 to 1.42 ± 0.10 whereas in the cultivars having >20% infestation (Himsagar, Barmasia, Raspur, Abe hayat, Benazir, Gulab Khas, Sipiya, Fazli, Badshah Pasand, Sinduriya, Husnara, Safeda Malihabadi and Langara) it ranged from 0.36 ± 0.05 to 0.88 ± 0.08 .

The host preference of mango cultivars by RBMC, thus depends on two traits of fruits, namely, the distance from tip of stone to the distal end of the fruit and peel thickness. The reason behind this might be due to getting the shortest route to reach up to the seeds by caterpillars as these prefer to feed on the seeds over the pulp (Waterhouse, 1998; Golez, 1991; Krull and Basedow, 2006). Observations regarding making single bore hole by caterpillars typically at the distal end of the fruits are available (Krull, 2004; Krull and Basedow, 2006; Zaheruddeen and Sujatha, 1993; Sahoo and Das, 2004). In the cultivars like Amrapali and Kalapady, the peel thickness is more (1.42 and 1.21 mm) along with the distance from the distal end of the fruit to the stone being high (14.44 and 12.68 mm). These could protect these cultivars from infestation. The cultivars like Langra, Fazli and Phuniahad previously been reported as susceptible by Sahoo and Das (2004); the first two are observed to be highly susceptible in the present study too. Bhattacharya (2017) reported Mallika to have minimum infestation.

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