

EFFECT OF SOME HOST PLANTS ON THE DEVELOPMENT OF THE RED HAIRY CATERPILLAR *AMSACTA MOOREI* BUTLER

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The red hairy caterpillar, *Amsacta moorei* Butler (Arctiidae : Lepidoptera), is a polyphagous pest feeding on various cultivated plants in the arid zone of Rajasthan (Verma, 1983). The influence of different food plants on the growth of arctiids has been studied by Pandey *et al.* (1968), Katiyar *et al.* (1976), Lal and Mukherji (1978), and Sachan (1981) on *Diacrisia obliqua* Walker; by Perumal *et al.* (1972) on *Pericallia ricini* and by Bhardwaj and Kushwaha (1976) on *Amsacta lineola*. Little information is available regarding effect of different cultivated hosts on the larval growth and development in *Amsacta moorei*. The present study was undertaken on *Amsacta moorei* caterpillars fed on the leaves of six cultivated host. viz., pearl millet [*Pennisetum typhoides* (Burm. f.) Stapf & Hubb.] var. BJ 104; cowpea [*Vigna unguiculata* (Linn.) Walp] var. Pusa Asin (2460-2); mungbean [*Vigna radiata* (L.) Wilczek] var. S-8; mothbean [*Vigna aconitifolia* L.] var. Jadia; clusterbean [*Cyamopsis tetragonoloba* L.] var. Pusa Nav Bahar; and castor [*Ricinus communis* L.] var. Varuna. There were four replications for each host each having 20 newly hatched larvae (0-12hr old) released on fresh host leaves kept in 5 cm diameter

petri plates. With the growth, the larvae were transferred to 10 cm petri plates, and finally kept individually in the plates. Fresh leaves were provided to the larvae *ad libitum* every 24 hrs after clearing the leftover food and faecal matter. Observations were recorded on larval weight on the 10th day, larval period, per cent pupation, pupal period and per cent adult emergence (Table 1). Growth Indices were calculated after Srivastava (1959) and Howe (1971) and the success indices (Table 2) based on larval index (L), larval-pupal index (LP) and survival index (S) on the respective host were calculated after Prasad and Bhattacharya (1975) using the formula :

$$\text{Success index} = \frac{L + LP + S}{3}$$

Where, L = Larval index

LP = Larval pupal index

S = Survival index

Heaviest larvae were produced on pearl millet and cowpea. Larval growth was poorest on castor and clusterbean and the larval periods on these crops were significantly longer than those

Table 1. Mean performance of *Amsacta moorei* Butler on different hosts

Host	Larval wt. (mg) on 10th day	Larval period (days)	Per cent pupation	Pupal period (days)	* Per cent adult emergence
Pearl millet	590.0 a	17.8	75.06 a (93.0)	9.25 a	84.1 a (97.9)
Cowpea	620.0 a	16.9 a	72.05 a (90.0)	8.25 a	90.0 a (100.0)
Mungbean	460.0 b	16.5 a	64.93 (82.0)	9.0 a	90.0 a (100.0)
Mothbean	475.0 b	16.3 a	72.52 a (90.0)	9.0 a	90.0 a (100.0)
Clusterbean	390.0	18.3 b	53.79 b (65.0)	10.75 a	76.9 b (94.2)
Castor	315.0	19.0 b	50.81 b (60.0)	12.0	71.8 b (90.0)
SEm ±	12.29	0.349	2.346	0.539	2.229
CD (p=0.05)	37.04	1.05	7.07	1.63	6.7

* Angular transformed values ; figures in parentheses are actual means
Data followed by same alphabets in a column are statistically on par

on the three pulse crops. Pearl millet occupied an intermediate position with respect to the larval period. The per cent pupation and adult emergence were significantly lower in castor and clusterbean. Pearl millet and the pulses were on par for per cent pupation and adult emergence except that mungbean gave significantly lesser pupation than pearl millet, cowpea and mothbean. Pupal period was also comparable in the pearl millet and pulse crop; it was rather longer and on par with that of clusterbean in the case of pearl millet. Castor caused a significantly longer pupal period.

For comparison of larval growth, the Growth Index (Srivastava 1959) appeared to be more appropriate (Table 2). Howe's (1971) index is a variant of Srivastava's index. Log transformation of the per cent larval survival, practically the per cent pupation taken by Srivastava (1959), renders comparisons somewhat complex in case of Howe's index. Since pearl millet is the principal *kharif* crop in arid zones, it was considered as the standard host for the calculations of L, LP and S indices (Table 2) after Prasad and Mukherji (1975). Compared to pearl millet, cowpea gave a

Table 2. Growth and other indices for *Amsacta moorei* on different hosts

Host	* Growth Index		Larval index L	Larval Pupal index LP	Survival index S	Success index
	I	II				
Pearl millet	5.22	0.1105	1.0000	1.0000	1.0000	1.0000
Cowpea	5.32	0.1156	1.0508	0.9494	1.0214	1.0072
Mungbean	4.96	0.1159	0.7796	0.9269	1.0214	0.9093
Mothbean	5.52	0.1198	0.8051	0.9157	1.0214	0.9141
Clusterbean	3.55	0.0990	0.6610	1.0280	0.9622	0.8837
Castor	3.15	0.0935	0.5338	1.0674	0.9193	0.8402

* I (Srivastava, 1959)

II (Howe, 1971)

better success index (1.007). Mothbean and mungbean closely followed pearl millet for the success index.

These results suggest that cowpea and pearl millet are the most suitable hosts for *A. moorei* although the three pulses and pearl millet gave comparable development of the pest. Ramaswamy and Kuppaswamy (1973) reported that *Amsacta albistriga* Moore preferred cowpea even in the presence of the more preferred host i.e. groundnut. Verma 1982 stated that mungbean and mothbean are specifically preferred by *A. moorei*. However, feeding and host preferences by *A. moorei*, under field conditions are spontaneous (Verma, 1983). The results of various growth studies under laboratory conditions are also likely to be influenced by variable feeding behaviour of *A. moorei* larvae.

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