https://doi.org/10.29321/MAJ.10.A02329

Madras Agric J. 73 [12] 676--678 December 1986

CONSUMPTION DIGESTION AND UTILISATION OF BHENDI VARIETIES BY *Earias vittella* Fabricius

N. DHANDAPANI*

Consumption index, growth rate and ECD of *E vittella* were maximum on the variety Pusa Savani, while the AD. ECI and ECD were more on the culture AE 17.

Studies on consumption, digestion and utilisation of food plants by insects are important to provide information on the quantitative loss brought about by the pests. Consumption indices are indirect measurements of the relative susceptibilities of different varieties of crop to pest infestation. This type of studies were undertaken for *Heliothis armigera* (Dhandapani and Balasubramanian, 1980) and *Spodoptera litura* Balasubramaniam, 1982). *Earias vittella* Fb. preferred bhendi more than the other nine hosts (Srivastava *et al.*, 1983), the bhendi entries CO1, AE 17 and AE 180 were found to be less susceptible and Pusa Savani, AE 52 and AE 113 were highly susceptible (Mahadevan and Dhandapani, 1985) to *E. vittella*. The present study was undertaken to find out the indices relating to the consumption and utilization of tolerant/susceptible lines of bhendi *Abelmoschus esculentus*

MATERIALS AND METHODS

The quantity of good consumed, excreta voided and weight gained by the caterpillars from three days old caterpillar till pupation were determined both on fresh and dry weight basis. Fifty larvae were used for each variety and five replications were maintained. The dry weight of the larvae was estimated using the mean percentage of dry matter of an aliquot of similar larvae. To find out the dry weight of the larvae they were killed by freezing and then dried at 80° C to constant weight. The mean weight of the larvae was calculated by summing up the initial and final weights determined every day and dividing by the number of weighings. All the indices relating to consumption, digestion and utilisation of food materials were calculated according to Waldbauer (1968)

RESULTS AND DISCUSSION

On dry weight basis, the quantity of food consumed was significantly more in Pusa Savani followed by AE 113 and it was less on Co 1. The low consumption may be due to the pubescence on the rind of the fruits.

* Assistant Professor, Department of Agricultural Entomology, TNAU, Coimbatore-3.

The consumption index (CIs) of larvae on dry weight basis was high in AE 52 followed by Pusa Savani and less in AE 17 (Table 1).

The relative growth rate of the larvae was significantly more on Pusa Savani (0.245) followed by CO 1 bhendi (0.220) and minimum on AE113 (0.186), indicating the high nutritive value of Pusa Savani (Table 1). The superior host status of Pusa Sawani with regard to growth rate may also be due to more consumption of the variety (Balasubramanian, 1982).

Table 1. Data on CI, GR, AD, ECI and ECD of *E. vittella*

Culture	Total food consumption (Dry weight) (g)	Dry weight of food : dry weight of larva (CI)	Growth rate (GR)	A. D (%) Dry weight basis	E.C.I (%) Dry weight basis	E.C.D. (%) Dry weight basis
CO 1	0.3988	7.82	0.220	65 80 (54.21)	2.80 (9.63)	4.25 (11.97)
AE 17	0.5588	6.14	0.214	60.76 (51.24)	3.49 (10.78)	5.74 (13.81)
AE 113	0.7259	8.34	0.186	48.75 (44.31)	2.23 (8.53)	4.58 (12.39)
AE 180	0.6188	8.84	0.189	59.16 (50.30)	2.13 (8.33)	3.61 (10 94)
AE 52	0.7189	10 42	0.215	41.92 (40.34)	2.05 (8.13)	4 89 (12 79)
Pusa savani	0.8735	9.70	0.245	44.33 (41.73)	2.59 (9.28)	5.84 (13.94)
CD (P=0.01)	0.0170	0.84	0.012	1.07	0.51	0.87

(Figures in parentheses are transformed values)

The approximate digestibility (AD) was high on CO 1 on dry weight basis (65.80%) followed by AE 17 (60.76%) and less in AE 52 (41.92%) (Table 1). The lessd igestibility might be due to nutrient imbalance.

The index of gross effiiciency ie., efficiency of conversion of ingested food to body sbsutance (ECI) was high in AE 17 (3.49%) on dry weight basis and minimum in AE 52 (2.05%) [Table 1]. The dry weight ECI possibly reflected better the balance of older larvae and more energy spent for body maintenance could account

for the less ECI [Kogen and Cope,1974]

The ECD [ie.,] efficiency with which digested food is converted to body matter [ECD] or net efficiency was maximum on Pusa Savani [5.84%] on dry weight basis which was at par with AE17 [5.74%] [Table 1].

Considering the high consumption index, growth rate and ECD of *E vittella*, Pusa Savani was the most suitable host followed by the line AE 17 based on AD, ECI, and ECD for better culturing of *E. vittella*

REFERENCES

BALASUBRAMANIAN, G 1982. The tobacco cutworm *Spodoptera litura* Fb ecology-food utilisation and effect of insecticides. Ph. D. Thesis, Tamil Nadu Agril. University, Coimbatore, India p. 140.

DHANDAPANI, N. and M. BALASUBRAMANIAN, 1980. Consumption and utilisation of different food plants by *Heliothis armigera* (Hb) (Noctuidae : Lepidoptera). *Entomon 5* : 99-103.

SRIVASTAVA, P D., M. G. JOTWANI, R. A. AGARWAL, S. R. WADHI, R. K. BHATNOTAR and K K BHATNAGAR, 1983. Agricultural Entomology Vol. II (New Delhi : All India Scientific Writers Society), p. 438

WALDBAUER, G. P. 1968 The consumption and utilization of food by insects. 229-288. In : *Adv. Insect Physiol*., V (ed. Rockstein, M) Academic Press, New York.

KOGEN, M. and D. COPE, 1974. Feeding and nutrition of insects associated with soybians 3. Food intake, utilization and growth in soybean looper, *Pseudoplusia includens* walker *Ann Ent. Soc. Am., 67* : 66-72.

MAHADEVAN, N R. and N. DHANDAPANI, 1985. Varietal resistance in bhendi to fruit borer *TNAU Neurl 14* (10) : 3.