

Bracon heinator Say Infesting Laboratory culture of *Corcyra cephalonica* St. and its Effectiveness in a Warehouse Stacked with Jowar

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Rice moth, *Corcyra cephalonica* St. is one of the important laboratory hosts for mass culturing parasites of insect pests of crops. *C. cephalonica* was mass cultured for three successive years in the Parasite Research Laboratory at the Anand Campus of the Gujarat Agricultural University for mass breeding egg parasite, *Trichogramma chilonis* Ishii, and a larval parasite, *Bracon gelechiae* Ash. During November 1973, the authors came across an ecto-larval parasite infesting the laboratory culture of *Corcyra* and was found to be well established in almost all the host rearing cages. The parasite was later identified as *Bracon heinator* (Hymenoptera: Braconidae). The following observations were recorded during the course of the study.

The parasite was found penetrating into loose grain in the cages in search of host larvae. It was also noticed to parasitise the host larvae through the top cover of the host rearing cages. Full grown *Corcyra* larvae were parasitised by the Braconid. Although the young host larvae were stung, the pa-

rasite did not lay eggs on them. At the peak period of parasitisation, 60 per cent of *Corcyra* larvae were found parasitised in the rearing cages. This high rate of parasitisation of the larvae adversely affected *Corcyra* moth emergence which ultimately affected its egg production. The number of *corcyra* eggs produced during the period and the number of parasite adults collected from rearing cages are given in Table 1.

The data given in the table show that *Corcyra* culture should have been infested by *B. heinator* some time in October and built up the population so that 330 adults could be collected from the *Corcyra* rearing cages in the first week of November. Despite the efforts to collect the adults from the cages and baiting the escaping adults with cotton swabs soaked with poisoned sugar solution, the parasite continued to infest the culture till the last week of December. This parasitisation adversely affected *Corcyra* moth emergence which ultimately reduced the egg production. The data show that egg production was over 1300 thousands during October when the parasite was beginning to build up in the culture. Because of the parasite infesting the culture, the egg production was reduced to as few as 64 thousand eggs per week in the last week of December. When the corrective steps were successful, the culture established normally and *corcyra* egg production increased to as high as 618 thousand per week by fourth week of January. Subramaniam

TABLE 1

Weekly collection of *Corcyra* eggs (in thousands) and the number of *Bracon heinator* adults collected from the rearing cages (given in parenthesis)

Month	Number of eggs in thousands/week				Total
	I	II	III	IV	
October	1438 (0)	2167 (0)	2070 (0)	1300 (0)	6775 (0)
November	395 (330)	116 (461)	290 (294)	670 (317)	1471 (1357)
December	435 (150)	420 (62)	200 (35)	64 (11)	1119 (258)
January	252 (0)	418 (0)	540 (0)	618 (0)	1828 (0)

and Seshagiri Rao (1940) have also reported *Microbracon brevicornis* Wsm. (Hymenoptera: Braconidae) as limiting factor in mass culturing of *C. cephalonica* at Mandya, Mysore. They set light traps continuously for about two months in summer to reduce the trouble to negligible proportion. Effectiveness of *B. heinator* releases in godown infested with *C. cephalonica*.

Very little attention has been paid to biological control of pests of stored grain in India. Pingley (1954), however made some preliminary experiments with a Reduviid, *Amphibolus venator* Klug which was found preying on the larvae of *Tribolium castaneum* Herbst, *T. granarium* Everts and *corcyra cephalonica*. In this release trial with 100 adults of *A. venator* against *Ephestia cautella* Wlk. and *Alphitopus diaperinus* (Panz.), he reported that grain damage was less in warehouses where predator was released. However, no attempt like this has been made against *corcyra cephalonica*. Therefore, after getting sufficient numbers of *B. heinator* adults from *Corcyra* rearing cages, they

were released in a storage godown (12 x 9 x 3m) belonging to the Polutry Section and having about 200-250 gunny bags of jowar stacked in it. Before releasing the parasites in the godown, it was checked that no parasite was present on the *Corcyra* larvae. Observations on parasitism were recorded after 4 days from the release of the parasite. The details of parasite release and percentage of parasitism are given in Table 2.

The data presented in Table 2 show that the parasite was effective soon after the release giving 93.4% kill of *Corcyra* larvae. No parasitism was recorded in a similar godown located in Anand town grain market which was maintained as control. The effect of release of parasites in the godown after these releases could not be estimated because the godown was emptied and fresh stocks, free from *Corcyra* infestation was brought in. However, a large number of *B. heinator* adults were observed hunting for the host larvae even after a month from the release.

TABLE 2

Effectiveness of *B. hebator* against *C. cephalonica* infestation in godown.

Date of release	No. of parasites released	Experimental godown		Control godown	
		No. of Corcyra	% parasitised	No. of Corcyra	% parasitised
		larvae examined		larvae examined	
1973					
Nov. I week	330	136	73.4	60	0.0
Nov. II week	416	86	83.7	120	0.0
Nov. III week	294	62	93.4	24	0.0
Nov. IV week	317	42	88.0	13	0.0

These observations suggest that mass release of *B. hebaator* in *Corcyra* infested grain godowns could be effectively utilized to achieve biological control of the pest. This can be substantiated by the fact that a similar Bracconid, *Bracon gelechiae* was introduced from Canada for the control of potato tuber moth, *Gnorimoschema operculella* infesting potato tubers under storage in Bihar and has been reported to be established (Sen, 1964).

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