TECHNIQUE FOR REARING THE PREDATORY MIRID BUG *CYRTORHINUS LIVIDIPENNIS* (REUT) ON *CORCYRA* EGGS

J. S. BENTUR and M. B. KALODE
Directorate of Rice Research, Rajendranagar, Hyderabad 500030, India.

THE predatory mirid bug *Cyrtorhinus lividipennis* (Reut) feeds on eggs and early stage nymphs of leaf hopper and planthopper pests of rice—particularly those of the brown planthopper (BPH), *Nilaparvata lugens* (Stal)[1]. It is one of the important natural enemies affecting the population build-up of these pests. Conservation of the mirid bug population in endemic areas has been considered to be an important step in brown planthopper pest management[2,3]. In endemic areas, it would be advantageous to augment the existing population of the predator through inundative releases for timely suppression of the BPH population. This could be achieved provided a large number of predators can easily be and cheaply mass reared in the laboratory. At present the predator can only be multiplied on its natural hopper preys which in turn have to be reared on pot cultured rice plants. This method cannot be adopted for mass rearing of the mirid as it would involve laborious efforts to maintain rice plant and prey culture in a greenhouse. Therefore, an alternative method of rearing the predator on other food sources was attempted as described here.

As a prerequisite for these studies a suitable rearing cage was fabricated from plastic petri-dishes and a piece of tri-acetate sheet. This was necessary since most of the readily available containers proved either too dry or too wet with water condensing on inner surface and thereby causing high insect mortality. The present cage (figure 1) had two inter-connected compartments; the large upper A meant for maintaining the insects and the small lower B for storing water that would keep the muslin cloth floor of A wet through a sponge piece. The three holes on the top were used for inserting food/water sachets and the insects. This cage maintained 90–95%. RH in A without water being condensed on inner surface, prevented insects coming in direct contact with water and also permitted replenishing periodically water/food for insect or water in B without any risk of insects getting away.

Honey, poultry egg yolk and eggs of the rice moth *Corcyra cephalonica* (Stainton) were tested. While *Corcyra* eggs were glued to a narrow piece of card or filter paper roll, honey and egg yolk were given in parafilm sachets in narrow tubular shapes. In the first

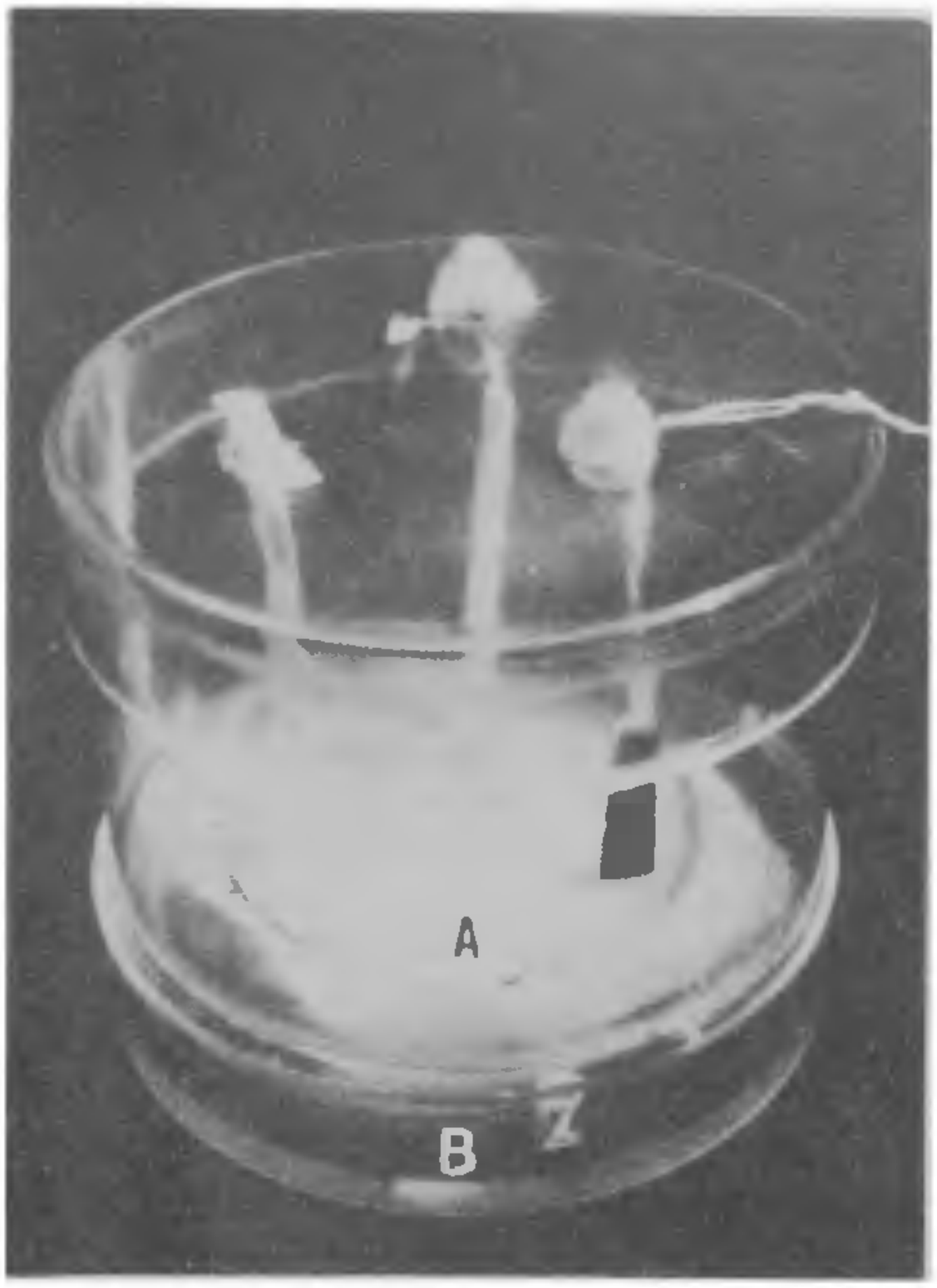

Figure 1. Rearing container for the mirid bug, *Cyrtorhinus lividipennis* (Reut.). Upper compartment A for insects while lower B to hold water for maintaining high humidity.

experiment, survival of 25 first instar nymphs on each of the diet in no-choice set-up indicated that egg yolk, honey, egg yolk + water or water alone could not sustain the nymphs. On concentrated honey, nymphs could survive for 3.1 ± 0.6 days only. On *Corcyra* eggs, however, 40% of the nymphs reached adult stage as compared to 53% on BPH eggs in rice seedlings. In the second experiment 50 adult mirid bugs in each of 3 replications were offered egg yolk, honey and *Corcyra* eggs glued to paper roll in multi-choice test for 6 days. Observations at regular intervals revealed 49.4% of the adults being settled on paper roll with *Corcyra* eggs, 27.2 on egg yolk sachet and 23.4 on honey sachet. Oviposition during 6-day period indicated 71.5% of the eggs laid in paper roll while 13.5 and 15% were laid in yolk and honey sachets, respectively. Thus neither egg yolk nor honey was found suitable for nymphal survival, adult preference for feeding or oviposition. However, honey has been noted to provide better survival of the mirid bug in studies at the International

Rice Research Institute[4]. Our studies pointed out better performance of *Corcyra* eggs as a food source for the predator.

In a subsequent experiment 70 to 100 first instar nymphs were reared in groups of 10 per replication on *Corcyra* eggs + water, water alone or BPH eggs in rice seedlings While nymphs could not survive beyond 3 days on water alone, 26.0 and 47.1% of them developed to adult stage on *Corcyra* and BPH eggs, respectively. Relatively lower survival on *Corcyra* eggs was not due to nutritional requirement problems as indicated in individual rearing of newly hatched mirid bug nymphs wherein 81.8% could survive and develop to adult stage. Daily rate of *Corcyra* egg consumption noted in this experiment is presented in figure 2. On an average 7.5 ± 1.3 eggs were consumed per day per nymph. However, nymphal duration was slightly prolonged on *Corcyra* (14.0 ± 0.4 days) as compared to that on BPH (12 3 ± 0.3 days). Emerging adults survived for 10.5 ± 1.9 days and consumed 9.84 ± 1.2 eggs daily.

In further experiments filter paper fold as a substrate for oviposition was evaluated. When given a choice to gravid females, all the eggs were laid in rice seedlings while none in paper roll though it contained *Corcyra* eggs as the only food source. However, if choice is not given the eggs were laid in the paper roll (av. no. 25.1/female) though less in number as compared to the rice seedlings (31.3/female). Eggs in the paper roll could be incubated in closed screw cap vials. Thus the entire life cycle of *Cyrtorhinus lividipennis* could be completed on *Corcyra* egg diet without resorting to maintenance of BPH culture on rice plants. Adopting this method a small culture is being maintained in laboratory for several generations.

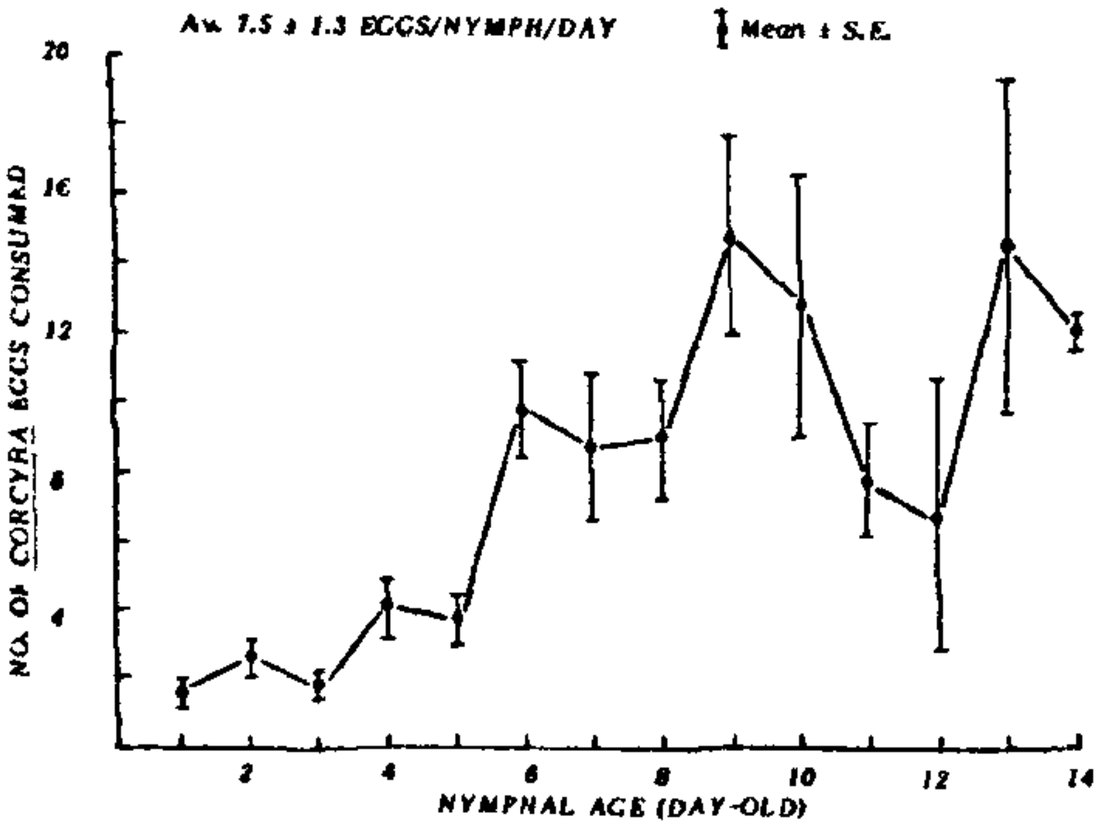

Figure 2. Daily egg consumption by nymphs of *C. lividipennis* when offered with eggs of the rice moth *Corcyra cephalonica* (Stainton).

8 December 1984

1. Pophaly, D. J., Bhaskar Rao, T. and Kalode, M. B., *Indian J. Plant Protect.*, 1978, **6**, 7.
2. Otake, A., *The rice brown planthopper*, Food and Fertilizer Technology Centre for the Asian and Pacific region, Taipei, Taiwan, 1977, p. 42.
3. Anonymous, *Prospects for biological control of rice hoppers*, Status paper of Commonwealth Institute of Biological Control, Trinidad (mimeo.), 1979, p. 12.
4. International Rice Research Institute (IRRI), *Annual Report for 1980*, IRRI, Los Banos, Philippines, 1981, p. 200.

A SOURCE OF MORPHOLOGICAL RESISTANCE TO LEAF BLIGHT DISEASE OF RAPE SEED AND MUSTARD CAUSED BY *ALTERNARIA BRASSICAE* (BERK) SACC.

P. N. MUNDE and T. P. BHOWMIK
Division of Mycology & Plant Pathology, Indian Agricultural Research Institute, New Delhi 110012, India.

ABSENCE of resistant varieties against leaf blight disease caused by *Alternaria brassicae* (Berk) Sacc is one of the principal reasons for low productivity of rape seed and mustard in India[1, 2]. In field trials during 1979 to 1983 crop seasons, a large number of germplasm materials comprising various species of *Brassica* were tested to identify resistance against Alternaria leaf blight under conditions of its natural incidence. During these trials, *Brassica oleracea* L var *alboglabra* Bailey plants consistently showed resistant reaction, forming only a few small scattered lesions on their leaves even though the disease developed in severe form on other cultivars. Tiwari and Skoropad[3] reported that epicuticular wax layer on two cultivars of *B. napus* L confers a physical type of resistance to black spot disease incited by *A. brassicae*. The present study was undertaken to determine whether the resistance in *B. oleracea* var *alboglabra* is also due to the presence of such wax layer.

Plants of *B. oleracea* var *alboglabra* together with