N O T E

Effect of Host Plant Species and Age of Rice Bug (Hemiptera: Alydidae) Eggs on Parasitism by *Gryon nixoni* (Hymenoptera: Scelionidae)[1]

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Rice bug, *Leptocorisa oratorius* (F.) (Hemiptera: Alydidae), is an important pest in Asia, for heavy infestations destroy rice crops (Srivastava, A.S. and H. P. Saxena. 1967. The major insect pests of rice, Johns Hopkins Press. pp. 525-546.). Rice bug eggs are attacked by a parasitoid, *Gryon nixoni* Masner (Hymemoptera): Scelionidae) (Sands, D. P. A. 1977. Res. Bull. Dept. of Primary Industry. Papua, New Guinea. 18:104). We wanted to determine the current prevalence of this parasitoid, investigate its biology, and test the effect of weed hosts on incidence of parasitism.

Parasitoid prevalence was determined from rice bug (RB) egg masses collected in fields near Aborlan, Palawan, (Philippines) on 25 and 27 Feb.; in Laguna, Luzon, on 28 Apr, and Batangas, Luzon, on 4 May 1989. Rice plant leaves and egg masses were held in glass tubes (2.5 cm dia × 16 cm long) closed with parafilm in the laboratory to recover adult parasitoids. Parasitoids were sexed, and numbers were recorded.

Thirty six percent of the 71 egg masses collected on Palawan contained parasitoids. Within each mass, 18.3% of the eggs were parasitized. From Laguna, 36% of 25 egg masses were parasitized, and 9.3% of 365 eggs were parasitized. In Batangas, 46.9% of 32 masses were parasitized, and 20.8% of 76 eggs were parasitized. There was a 1 : 2.7 male : female parasitoid sex ratio. No other species were recovered from the RB eggs.

Adult parasitoids used for fecundity studies were obtained from RB egg masses collected in rice field in southern Luzon. Eggs were held in tubes. Ten pairs of newly emerged parasitoids were caged on individually potted rice variety 'IR72' and about 20 fresh RB eggs. Exposed RB eggs were removed and replaced with fresh eggs daily until female parasitoids died. Exposed egg masses were confined individually on caged potted plants until adult parasitoids emerged. Parasites were counted and recorded. Photoperiod was 12 hr, and temperatures ranged 24 - 25°C.

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Adult parasitoids emerged 18 - 20 days after RB eggs were attacked. Adults survived for 12 - 16 days in the laboratory. Females began to oviposit on the second day after emergence. Peak oviposition activity occurred on the sixth day, with a mean of six parasitized eggs per female. Individual parasitoids deposited a mean total of 31.8 eggs.

Parasitoids may require young host eggs for successful development. To investigate this concept, we collected fresh RB eggs daily from a laboratory colony for 7 days. Eggs were held in petri dishes on moist filter paper until the experiment began. Twelve groups of RB eggs which were 1, 2, 3, 4, 5, 6, or 7 days old were exposed to one mated female three-day old parasitoid in glass tubes (2.5 cm × 20 cm) closed with cotton balls dipped in 40% honey solution. After 48 hours, parasitoids were removed. There were 10 replications representing each of the age regimes. Parasitoid emergence from the RB eggs was recorded.

Parastoids attacked an averge of 20% of the RB eggs which were 1 and 2 days old. Successful attacks decreased to 10% and 0.6% on days three and four, respectively. Eggs which were 5 or more days old were not parasitized.

Rice bugs are fairly indiscriminate in selection of host plants for oviposition (Morrill, unpublished). Parasitoids may be attracted to host plants, and RB eggs which are on suitable hosts may be more likely to be parasitized than those on non-host plants. To determine the effect of host plants on parasitism of RB eggs, five gravid RB were placed on individual flowering potted plants of rice variety 'IR-36,' and the commonly occurring weeds *Echinochloa colona* (L.), *Echinochloa crus-galli* (L.), *Echinochloa glabrescens* Munro, *Elesusine indica* (L.), *(Brachiaria mutica* (Forsk.), and *Paspalum paspalodes* (L.). There were six plants of each species, representing six replications. Plants and RB were caged in the greenhouse, and after 24 hr, cages and bugs were removed. Rice bug eggs were removed as necessary to obtain 50 eggs per plant. Potted plants and eggs were placed at random locations in a 2,500 m^2 field of rice in the booting stage. After 3 days, plants were retrieved. Leaves with RB eggs were removed from plants, placed in glass tubes, and parasitoid emergence was recorded. Mean numbers of RB egg masses and mean numbers of eggs within RB masses which were parasitized were compared with one-way analysis of variance, $P \leq 0.05$, with the aid of a computerized statistical package called MSUSTAT Lund, R. E. 1988. Res. and Devel. Inst., Mont. State Univ., Bozeman). Students t test was used to separate means when f values were significantly different, $P = \leq 0.05$.

Rice bug egg masses on rice were more likely to be parasitized than egg masses on the weeds *Eleusine indica* or *Echinochloa glabrescens* (Table 1). Flowering rice is a suitable host for RB nymphs, but *Eleusine indica* is not (Morrill unpublished). The suitability of *Echinochloa glabrescens* as a host of RB nymphs is not known.

Within the parasitized masses, there was no significant difference in percent parasitism. This indicates that the species of plants on which RB lays eggs affects the chances of being found, but once the egg masses are found, the plant species has no effect on numbers which will be attacked.

Table 1. Effect of host plant species on rice bug egg parasitism by *Gryon nixoni*.

Host plant	% egg masses* parasitized	% eggs parasitized	Host of rice bugs†
Oryza sativa (rice)	35.8a	49.6	yes
Echinochloa crus-galli	26.7ab	63.3	yes
Paspalum paspalodes	28.3ab	34.1	no
Echinochloa colona	16.7ab	41.0	no
Brachiaria mutica	13.3ab	56.8	no
Elusine indica	7.5b	40.8	no
Echinochloa glabrescens	4.7b	56.0	unknown
F value =	3.21	0.59 ns	

* Means within columns followed by the same letter are not significantly different, ANOVA, LSD, $P \leq 0.05$.

† Based on ability of rice bug nymphs to survive and grown (Morrill unpublished).

Gryon nixoni appear to be ineffective in suppressing RB populations. This may be explained in part because RB females produce an average of 135 eggs (Morrill unpublished), while individual female parasitoids attacked only 32 eggs.

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