

SCIENTIFIC NOTE

Seed-Carrying and Feeding Behavior of *Jadera choprai*
Göllner-Scheiding (Heteroptera: Rhopalidae)ANTÔNIO R. PANIZZI¹ AND EDSON HIROSE²¹Embrapa, Centro Nacional de Pesquisa de Soja, C. postal 231, 86001-970, Londrina, PR²Depto. de Zoologia, Universidade Federal do Paraná, C. postal 19020, 81531-990, Curitiba, PR*Neotropical Entomology* 31(2): 327-329 (2002)Comportamento de Carregamento de Semente e Alimentação de *Jadera choprai*
Göllner-Scheiding (Heteroptera: Rhopalidae)

RESUMO – Durante os meses de fevereiro e março de 2001, observou-se o comportamento de carregamento de sementes de *Cardiospermum halicacabum* (L.) (Sapindaceae) e alimentação pelo percevejo *Jadera choprai* Göllner-Scheiding. Observações de campo revelaram que o percevejo se alimenta de sementes maduras caídas no solo. Testes conduzidos em laboratório indicaram que o percevejo é capaz de conduzir as sementes por distâncias de até 200 cm. Vários indivíduos foram observados alimentando-se simultaneamente de uma única semente, com ocorrência de canibalismo. Aparentemente, trata-se da primeira contatação da associação de *J. choprai* com *C. halicacabum* e do primeiro registro do carregamento de sementes maduras por essa espécie de ropalídeo.

PALAVRAS-CHAVE: Insecta, *Cardiospermum halicacabum*, saco-de-padre, soja, dispersão de semente.

ABSTRACT – During February-March 2001, the seed-carrying and feeding behavior on *Cardiospermum halicacabum* (L.) (Sapindaceae) by *Jadera choprai* Göllner-Scheiding was studied. Field observations indicated that the bugs feed on seeds found on the ground. Laboratory studies indicated that *J. choprai* may carry seeds 200 cm from where they were found. Several individuals were observed feeding on one seed, with the occurrence of cannibalism. Apparently, this is the first record on the association of *J. choprai* with *C. halicacabum*, and on seed-carrying by this rhopalid.

KEY WORDS: Insecta, *Cardiospermum halicacabum*, balloon vine, soybean, seed dispersion.

The scentless plant bugs belong to the family Rhopalidae (Heteroptera) with 20 genera and about 200 species worldwide (Göllner-Scheiding 1983). Although this family is considered of minor economic importance (Schaefer & Kotulski 2000), species such as *Niesthrea louisianica* (Sailer) are of great economic impact by reducing the seed viability of the weed *Abutilon theophrasti* Medikus (Spencer 1984, 1987; Kremer & Spencer 1989).

During February-March 2001, nymphs and adults of the species *Jadera choprai* Göllner-Scheiding were observed at the Embrapa (Empresa Brasileira de Pesquisa Agropecuária) Experimental Field Station in Londrina Co. northern Paraná Brazil, associated with the balloon vine *Cardiospermum halicacabum* (L.) (Sapindaceae), a weed commonly found in soybean [*Glycine max* (L.) Merrill] fields in southern Brazil (A. Brighenti, personal communication). The bugs were observed mostly on the ground feeding on fallen mature seeds. Because bugs were

observed moving on the ground with seeds attached to their mouthparts (stylets), laboratory observations were carried out on the seed-carrying and feeding behaviors.

To study the seed-carrying behavior, adults were taken to the laboratory and placed inside tracks. Each track consisted of a plastic tube cut by half, 2 m long, with 5 cm diameter. Sand was put along the tube, and the open side of the tube was covered with transparent microfilm. In one end of the tube, two plastic lids (2 cm diameter) were set, one containing mature seeds of the balloon vine, and the other containing wet cotton. Three pairs of adults were released in each of the four tracks, and observed daily for 10 days. Each day, the distance of each seed carried away from the release point was recorded, and the seeds re-arranged at the starting point. The distance of seeds carried away from the starting point was ranked in one of the four classes: 1 = 0 – 10 cm; 2 = 11 – 50 cm; 3 = 51 – 100 cm; and 4 = 101 – 200 cm. The percentage of seeds ranked in each class was calculated.

In a second test, three pairs of bugs were released inside each of four plastic boxes (12 x 12 x 3.8 cm). In each box a plastic lid containing mature seeds (30 seeds) and a plastic lid with wet cotton were set. Daily observations were made for 24 days, recording the number of seeds dislodged from the lids. After each period of 24 hours, the seeds were rearranged inside the lid. The percentage of the number of seeds dislodged from the lid was calculated.

Results of these laboratory tests indicated that *J. choprai* adults carried the mature balloon seeds up to 10 cm from the release point in 89.4% of the cases (n = 76). Considering 50 cm from the release point, only 4.7% of the events (n = 4 seeds) were observed; up to 100 cm, 2.4% of the events (2 seeds) were recorded; and considering the maximum distance of 200 cm, 3.5% of the events (3 seeds) were observed (Fig. 1). Considering the seeds removed from the plastic lids, after 24h, in 31.9% and 30.6% of the cases (n = 23 and 22, respectively) one and two seeds were removed. In 23.6% of the cases (n = 17), three seeds were removed; and in less than 7% of the cases, four to six seeds were removed (Fig. 2).

Results of these two tests suggest that *J. choprai* may carry seeds for relatively long distances, but in most cases will feed on seeds without taking them to distances greater than 10 cm from where they were found. Apparently, adults will drag seeds walking backwards, looking for a hidden place to feed without being disturbed by conspecifics. In several occasions, three to four bugs were found feeding on the same seed. In these occasions cannibalism was observed, which has been reported for other rhopalids, such as *Jadera haematoloma* (Herrich-Schaeffer) (Carroll & Loye 1987). This hypothesis is also supported by the fact that, when seeds were offered to bugs on the ground with a plant model (artificial plant), the bugs pierced the seeds with their stylets and carried them up to the plant, apparently looking for a hidden place to feed (Fig. 3), avoiding food competition and cannibalism. The balloon vine is known to growth over

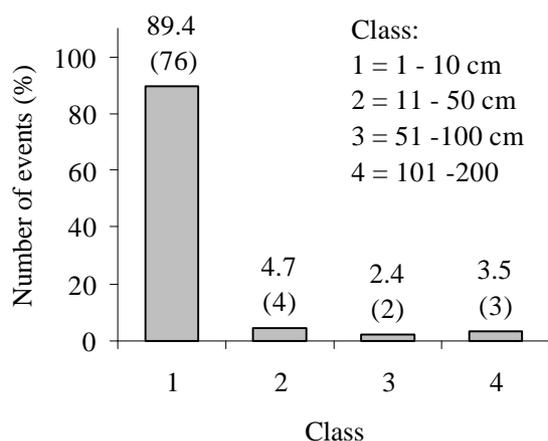


Figure 1. Distance of seeds of balloon vine, *C. halicacabum*, carried by adult *J. choprai* in the laboratory. Distances ranked in four classes and data expressed as the percentage of events ranked in each class (number of seeds in parentheses).

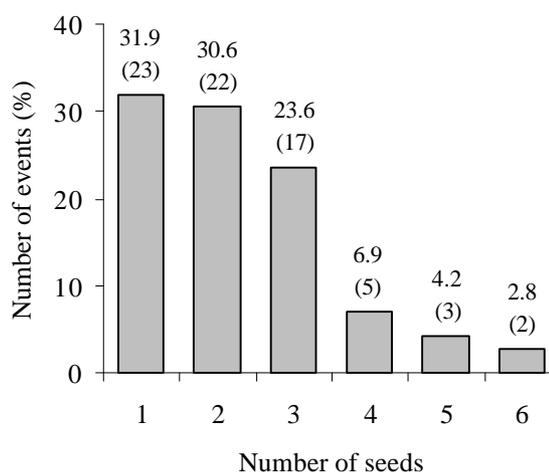


Figure 2. Percentage of the number of events when seeds of balloon vine, *C. halicacabum*, were dislodged from the feeding site by adult *J. choprai* in the laboratory. Number of seeds removed were ranked from one to six (number of events in parentheses).

other plants and to form a dense vegetation close to the soil, providing shelter to the bugs to feed on fallen seeds.

Seed-carrying has been reported for other heteropterans that live on the soil, such as cydnids (Sites & McPherson 1982, Tsukamoto & Tojo 1992, Takeuchi & Tamura 2000). For the rhopalids this fact has been little investigated, probably because, in general, they move seeds to small distances. Although *J. haematoloma* has been reported associated with *C. halicacabum* in the United States (Carroll & Loye 1987), this is the first record of *J. choprai* feeding on this weed plant. Our data also suggest that during feeding this bug may disperse seeds of the balloon vine by carrying them away.

Acknowledgments

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Figure 3. Adults of *J. choprai* carrying seeds of balloon vine, *C. halicacabum*, on a plant model (artificial plant) in the laboratory.

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