

Guidance for packing and shipping *Cleruchoides noackae* eggs for *Thaumastocoris peregrinus* biological control

Jade Cristynne Franco Bezerra¹; Vitória Maria Bisewski⁴; Bruna Ferreira dos Anjos¹; Leonardo Rodrigues Barbosa⁶; Claudineia Fernanda Paes Fogaça³; Amalia Toledo Ferreira⁵; Carlos Frederico Wilcken²

¹Doutoranda. Botucatu, São Paulo. Brasil. Laboratório de Controle Biológico de Pragas Florestais, Departamento de Proteção vegetal, Universidade Estadual Paulista; ²Docente. Botucatu, São Paulo. Brasil. Laboratório de Controle Biológico de Pragas Florestais, Departamento de Proteção vegetal, Universidade Estadual Paulista; ³Técnica. Botucatu, São Paulo. Brasil. Laboratório de Controle Biológico de Pragas Florestais, Departamento de Proteção vegetal, Universidade Estadual Paulista; ⁴Mestranda. Botucatu, São Paulo. Brasil. Laboratório de Controle Biológico de Pragas Florestais, Departamento de Proteção vegetal, Universidade Estadual Paulista; ⁵Estudante de graduação. Botucatu, São Paulo. Brasil. Laboratório de Controle Biológico de Pragas Florestais, Departamento de Proteção vegetal, Universidade Estadual Paulista; ⁶Pesquisador. Colombo, Paraná, Brasil. Embrapa Florestas.

Palavras-chave: egg parasitoid; natural enemies; temperature monitoring.

Cleruchoides noackae (Hymenoptera: Mymaridae) is widely used as a biological control agent for *Thaumastocoris peregrinus* (Hemiptera: Thaumastocoridae) in eucalyptus plantations. Collecting information about parasitized eggs shipments is crucial for the success of the Integrated Pest Management (IPM). Concerns related to shipping insects include temporal delays and egg quality losses. Uncertainties remain regarding the influence of temperature and shipping containers on the quality of the shipped parasitoids. This study aimed to improve methods for transporting *C. noackae*, evaluating packaging types capable of maintaining the quality of the parasitoid for release. Styrofoam boxes with artificial ice packs inside, cardboard boxes, and paper envelopes were evaluated. *C. noackae* couple (12h old) were exposed for 24h to 10 eggs (< 24h old) of *T. peregrinus* in polystyrene vials (7 cm long × 3 cm diameter) and fed with 50% honey solution. After a 24-hour period, the parasitoids were removed from the vials and 48 hours later, the eggs were and packaged in their respective treatments and then sent through normal shipment via Sedex®. The assessment of parasitism was based on counting the number of emerged and retained parasitoids in the eggs. The temperature inside the containers was collected by a *datta-logger* to determine the amount of insulation and refrigerant in the internal temperature throughout the shipping. Parasitism was 42.75% and 41% for paper envelopes and ice packs, respectively, with no statistically significant difference between them. The cardboard box had a parasitism rate of 1.25%. Ice packs ranged from 5.5°C in first day to 25°C on the last day, cardboard boxes between 23.7°C and 28.2°C, envelope packaging maintained 22.8°C to 26.2°C. The proper choice of packaging is essential for the success of biological control, improving *C. noackae* rearing techniques. The best recommendation is the paper envelope, providing optimal conditions for the eggs in shipment.

Apoio: Profef-IPEF, CAPES.