

Potential of the parasitic wasp, *Lariophagus distinguendus* (Förster) (Hymenoptera: Pteromalidae) as a biological control agent for *Sitophilus zeamais* Motschulsky (Coleoptera: Curculionidae) in stored maize

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Abstract

The parasitic wasp, *Lariophagus distinguendus* is an ectoparasitoid of several weevil species that feed on durable stored products. The potential of using *L. distinguendus* for biological control of *S. zeamais* was assessed in maize stored in Perspex cylinders. The host finding behaviour of the parasitoid was studied in various vertical depths in the cylinders. Holes of 3 mm diameter were drilled through PVC pipes of 20.5 cm length and 20 mm diameter. The pipes were inserted into the holes in the cylinders. An acoustic detector was used to identify the maize kernels that contained 3 weeks old larvae of *S. zeamais*. Uninfested maize kernels were filled into the cylinder to depths of 20, 25, 30, 35, 40, 45, 95 and 100 cm, respectively. For depths of 20, 25 and 30 cm, 25 adult *L. distinguendus* aged between 0-14 days were released; for 35, 40 and 45 cm, 30 adult *L. distinguendus* were released while for 95 and 100 cm, 100 adult *L. distinguendus* of the same age were released, each on top of the uninfested maize. Each treatment was repeated three times. *L. distinguendus* adults that entered the pipe and the wire mesh cage to parasitize the *S. zeamais* infested maize kernel were collected and placed in 250 ml glass jars. The emergence of *S. zeamais* was recorded in both *L. distinguendus* treated and untreated maize weekly until the 6th week. *L. distinguendus* penetrated and infested *S. zeamais* stored in the cylinders at the different depths. The results showed that *L. distinguendus* was able to find its host in the cylinder in all tested depths with infested maize kernels and produce F₁ offspring. *L. distinguendus* significantly reduced the emergence of *S. zeamais* in stored maize. The significance of these results with respect to the suitability of *L. distinguendus* for the biological control *S. zeamais* is discussed.

Key words: biological control, *Lariophagus distinguendus*, *Sitophilus zeamais*, stored product protection, stored maize