ONE-YEAR PROTECTION OF STORED WHEAT WITH SEVERAL GRAIN PROTECTANTS

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ABSTRACT

This study was initiated in order to determine how long several grain protectants will provide acceptable protection against *Sitophilus oryzae* (L.), *Rhyzopertha dominica* (F.), and *Tribolium castaneum* (Herbst.), when applied to clean white winter wheat of 13.6% moisture content. The treatments in the experiment were: mixture of diatomaceous earth and deltamethrin (DE/DM insecticide) applied at 100 ppm containing 90 ppm of DE and 0.1 ppm of deltamethrin active ingredient (a.i.); spinosad technical 92% powder applied at 1 ppm a.i.; Storicide II a mixture of chlorpyrifos methyl (CM) and deltamethrin (DM), applied at 3 ppm CM and 0.5 ppm DM a.i.; Actellic 5 E (pirimiphos methyl) applied at 10 ppm a.i. Bioassays were initiated immediately after treatment (zero day), 30, 120, 180 and 360 d after the initial treatment and were maintained at 30±1°C and 70±5% air relative humidity during the twelve months. The treatment of wheat with DE/DM mixture and Storicide II provided effective protection against the adults and the progeny of all three species. Actellic at zero day controlled adults and the progeny of *S. oryzae* and *T. castaneum* (96% to 100%). However it did not control the adults and the progeny of *R. dominica* (38% adult's mortality and 96% progeny reduction). The effectiveness of Actellic on 360 d old deposit on grains was reduced against adults of *S. oryzae* to 12%, *R. dominica* to 45%, and *T. castaneum* to 38% and did not control completely their progeny. Spinosad did not control the adults and the progeny of *S. oryzae* and *T. castaneum* at zero day and 360 d. However, the effectiveness against adults and the progeny of *R. dominica* was 100% at zero and 360 d. The treatment of wheat with DE/DM mixture and Storicide II provided 100% protection against the adults and the progeny of all three species.

Key words: Grain protectants, Storicide II, diatomaceous earth and deltamethrin mixture, Actellic 5E, spinosad, *Sitophilus oryzae*, *Rhyzopertha dominica*, *Tribolium castaneum*, wheat