

Title Insecticidal effect of three diatomaceous earth formulations, applied alone or in combination, against three stored-product beetle species on wheat and maize

Author C.G. Athanassiou, N.G. Kavallieratos and C.M. Meletsis

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Abstract

Laboratory tests were carried out to examine the insecticidal effect of three commercially available diatomaceous earth (DE) formulations on wheat and maize against three major stored-grain beetle species: *Rhyzopertha dominica*, *Sitophilus oryzae*, and *Tribolium confusum*. The three DEs tested were Insecto[®], PyriSec[®], and Protect-It[®]. These DEs were applied alone or in all possible combinations (Insecto[®]+PyriSec[®], Insecto[®]+Protect-It[®], PyriSec[®]+Protect-It[®], and all three DEs together), at three (total) dose rates: 0.25, 0.5, and 0.75 g/kg of each commodity. Adults of the above species were exposed to the treated commodities for 7 d at 26 °C, and 65% r.h., and after this interval the mortality was measured. For each species, adult mortality was significantly affected by the type of DE, the commodity, and the dose rate. All DEs were less effective against *T. confusum*, where mortality did not exceed 67%, in comparison with the other two species, where 100% mortality was achieved in some combinations. For all species tested, all DEs were more effective on wheat than on maize. Generally, the mix of two or three DEs was more effective than the application of one DE, for all species and commodities. The results of the present work clearly indicate that a blending of several DEs together may produce a new DE formulation that is highly effective at low dose rates.