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Investigations on the efficacy of Turkish diatomaceous earth comparing with SilicoSec? against the stored grain pests

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Abstract

In this research, both Turkish diatomaceous earth from Central Anatolia and SilicoSec? was evaluated against *Tribolium confusum* Jacquelin du Val (Tenebrionidae: Coleoptera), *Rhyzopertha dominica* (F.) (Bostrychidae: Coleoptera) and *Sitophilus granarius* (L.) (Curculionidae: Coleoptera) adults. Different rates (0, 250, 500, 750, 1000, 1500 ve 2000 mg/kg wheat) of diatomaceous earth from both sample mixed with wheat were evaluated for 1, 2, 3 and 4-weeks exposure period at 55% r.h. and 25 adult/vial insect density in ten replicates. Mortalities were determined at the end of exposure, whereas F1 adult production were determined at 8 weeks after mortality

observation. Mortalities and F1 adults of *T. confusum*, *R. dominica*, and *S. granarius* was significantly changed by the rates of diatomaceous earth. In untreated wheat mortality was less than 10% for three species. Mortalities at 2000 mg/kg wheat applications at the end of 4-week of exposure against *S. granaries* were found to be 95.6% and 98% for SilocoSec and local DE, respectively. For *R. dominica* adults, mortalities were recorded as 90% and 92.4% for SilocoSec and local DE, respectively. Additionally, mortality of *T. confusum* at 2000 mg/kg wheat was 100% for both DE samples. Results showed that local DE and SilocoSec are equally effective against three major stored grain pests.

The Effectiveness of SilicoSec, Diatomaceous Earth Against the Lesser Grain Borer, *Rhyzopertha dominica* (L) (Coleoptera: Bostrichidae)

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Abstract

In this research, the efficacy of SilicoSec was assessed in two sets of experiments. In the first set of experiment, the efficacy of SilicoSec at the rates of 0, 250, 500, 1000, 1500, 2000, 2500 and 3000 mg/kg wheat were evaluated against *Rhyzopertha dominica* adults at 55% r.h and 25°C. Insect counts were performed at the end of 3 week of exposure for the mortality. F1 progeny assessment were made after 8 weeks.

In the second set of experiment, the efficacy of SilicoSec against the same insect pest was evaluated at dose rates of 0, 250, 500, and 1000 mg/kg wheat for three months of exposure. In each experimental vial there were 10 adults per 250 g wheat with 10 replicates. Insect counts as dead and alive were made at the end of three months of exposure. For each vial, progeny production was determined as total insects excluding 10 adults introduced at the beginning of the experiment.

According to results, increase in dose rates increased the adult mortality, while it decreased the progeny production. As the exposure time increased, mortality rates were also increased. At the dose of 2000 mg/kg, 98.5% adult mortality and 10.55 adult progeny per vial were obtained.

For three months exposure, population development was inversely proportional to dose rates. According to results, increase in dose rates increased the adult mortality, while it decreased the progeny production. Population confinement was achieved at 1000 mg/kg dose rate of SilicoSec for three months of exposure.

Key words: Diatomaceous earth; *Rhyzopertha dominica*; exposure interval; progeny production; mortality

Host-preference and parasitic capacity of five *Trichogramma* species (Hym.: Trichogrammatidae) against some stored product moth pests

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Abstract

Most stored product insects are either beetles or moths. Moth pests are important hazards to the storage of a wide variety of products. Natural enemies are applied commercially against stored-product moths in Central Europe. So, the host-preference and parasitic capacity of four local *Trichogramma* spp. (*T. bourarachae*, *T. cordubensis*, *T. euproctidis* and *T. cacoeciae*), towards four species of stored product moth eggs were investigated in laboratory experiments in order to select new candidate species for use in mass rearing and biological control against moths in storages. The results were compared with *T. evanescens*, the common wasp used commercially for biological control. The naturally occurring *Trichogramma* species were collected for the first time in Egypt from two representative olive growing areas in arid area (170 km south of Alexandria) and semi-arid area (60 km west Alexandria, near the coast). All these wasps were also bred from naturally parasitized host eggs during