Insecticidal effects of diatomaceous earth and processed kaolin clay against two stored product pests under laboratory conditions

Farshid Shakhz Zare1, Hussein Farazmand2, Reza Vafaei Shushart1, Mehran Ghazavi1, Aref Marouf2

1- Department of Entomology, Faculty of Agriculture, Islamic Azad University of Arak.
2- Department of Agricultural Entomology, Iranian Research Institute of Plant Protection, Tehran, Iran.

The study was done to evaluate the insecticidal efficacy of diatomaceous earth (SEAYAN®) and processed kaolin clay (SEPISDANA®) against adults of Tribolium confusium (Col., Tenebrionidae) and Oryzaephilus surinamensis (Col., Silvanidae) under laboratory conditions (25±1°C, 65±5% R.H in darkness). Plastic jars (300ml) were provided and 100 gr wheat seeds (v.f. Fallal) were exposed with DE formulation at the doses of 100, 250, 500, 1000, 1500 and 2000 ppm and for kaolin 1000, 3000, 5000 and 10000 ppm. The experiments were performed exposing 7-10 days old for five exposure intervals (1, 3, 7, 15 and 30 days) at four replications and the adult mortalities were measured after exposure to both formulations, separately. The results showed that 100% mortality of T. confusium was achieved at 2000 ppm after 30 days of exposure and the highest mortality of O. surinamensis was obtained in treated with doses above 1000 ppm after first week. In case of Kaolin, the highest mortality of T. confusium (98.3%) was achieved after 30 days of exposure in treated with 10000 ppm, whereas 100% mortality of O. surinamensis in this concentration was obtained 15 days after treatment. In all experiments O. surinamensis was more susceptible rather than T. confusium. Generally, in this study, because of high concentrations of kaolin in compare with DE, use of kaolin (Sediran®) was not recommended alone to control stored product beetle pests.

Key words: Diatomaceous earth, Kaolin clay, Tribolium confusium, Oryzaephilus surinamensis, Insecticidal efficacy