

RESIDUAL EFFICACY OF SPINETORAM ON INFESTATION BY *Sitophilus oryzae*, SEED MOISTURE LEVEL AND GERMINATION IN RICE STORED IN DIFFERENT PACKAGING MATERIALS

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Rice weevils (*Sitophilus oryzae*) cause extensive damage in stored rice despite the use of different packaging materials. Due to the undesirable impacts of synthetic chemicals on biotic and abiotic environments, the use of biorational insecticides is emphasized. The bacterial formulation spinetoram is effective against several stored-product insects but its residual efficacy when applied on packaging materials on *S. oryzae* is less studied. Therefore, the objective of this study was to evaluate the efficacy of spinetoram applied on packaging materials in protecting rice stored through 4-month period. The experiment was a three factor-factorial, completely randomized design. The packaging structures made of polysack, polyethylene or plastic were sprayed with a particular spinetoram concentration (0, 1, 31.25 or 62.5 ppm) or water (0 ppm), and each filled with 200 g rice. Each treatment was replicated four times. Each packaging structure was placed inside a plastic bucket and two weeks old, hundred *S. oryzae* adults were introduced into each bucket to be outside the surfaces of packaging structures. The buckets containing bags/boxes filled with rice were kept at $30\pm 1^{\circ}\text{C}$, $65\pm 1\%$ RH. Progeny adult emergence as well as percentages of damaged grains, moisture and seed viability were determined at monthly intervals for four consecutive months. The data were analysed using ANOVA procedures of SAS, significance tested $p=0.05$. *Sitophilus oryzae* adults penetrated through the packaging materials used and infested the grains. The insect abundance increased with storage duration. There were significant differences among polysack, polyethylene and plastic materials sprayed with spinetoram against *S. oryzae* invasion. The lowest mean insect abundance (174), damaged kernels (32%), moisture percentage (10%) and highest seed viability percentage (69%) were found in rice stored in polyethylene bags treated with 62.5 ppm spinetoram. The study concludes that spinetoram applied on polysack, plastic and polyethylene protects rice over 4-month storage period from *S. oryzae* infestation.

Keywords: Packaging materials, Residual efficacy, *Sitophilus oryzae*, Spinetoram