

INSECTICIDE RESISTANCE OF *SITOPHILS ORYZAE* AND *CALLOSOBRUCHUS MACULATUS*, TWO MAJOR COLEOPTERAN PESTS OF STORED GRAINS IN SRI LANKA

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Post-harvest loss of stored grains due to insect pests is a major problem in Sri Lanka. Control of these pests has become challenging due to the development of insecticide resistance. This study aimed to investigate insecticide resistance of two major stored product pests: rice weevil, *Sitophilus oryzae* and cowpea weevil, *Callosobruchus maculatus*, against commonly used pesticides, malathion and deltamethrin. Five concentrations of each insecticide were selected based on preliminary results. Healthy adults (25-30), obtained from the stock cultures were exposed to each concentration (replicates were conducted to test >100 individuals per concentration) for 1 h using the insecticide-impregnated paper method. Mortalities were recorded after a 24-h recovery period. Log-probit curves were constructed, and the lethal doses needed to kill 50% and 90% (LD₅₀ and LD₉₀) of the established population were obtained by regression analysis. For both species, lethal dosages for deltamethrin were lower than that for malathion, indicating susceptibility to deltamethrin. The LD₅₀ of *Ca. maculatus* for deltamethrin (LD₅₀=200 mg/l) was 12.5 times lower than that of malathion (2,500 mg/l). The LD₉₀ (2,600 mg/l) of *Ca. maculatus* for deltamethrin was closer to the LD₅₀ of malathion (2,500 mg/l). For *Si. oryzae*, the LD₅₀ and LD₉₀ for deltamethrin were 2,400 and 9,700 mg/l, respectively. Both these values are noticeably higher than the values obtained for *Ca. maculatus*. The lethal dosages for malathion for *Si. oryzae* was slightly higher (LD₅₀=2,400 mg/l, LD₉₀=9,500 mg/l) than that of *Ca. maculatus* (LD₅₀=2,500 mg/l, LD₉₀= 8,500 mg/l). Overall, these results indicated a higher level of resistance in *Si. oryzae* to both insecticides. The susceptibility to deltamethrin suggests it could be more effective in controlling both pest species. Studies continue to determine the underlying resistance mechanisms these species show to tested insecticides.

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