

Title Evaluation of potential use of nootkatone against maize weevil (*Sitophilus zeamais* Motschulsky) and rice weevil [*S. oryzae* (L.)](Coleoptera: Curculionidae)

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Abstract

Nootkatone is a natural sesquiterpene ketone that shows insecticidal activity against insects and ticks. Its contact toxicity and repellency against two major stored-product insect pests, maize weevil (*Sitophilus zeamais* Motschulsky) and rice weevil [*Sitophilus oryzae* (L.)], were investigated in the current study. Contact toxicity was evaluated using a no-choice test with treated filter paper, while repellency was evaluated using a choice test with treated corn (for maize weevils) or wheat (for rice weevils). Nootkatone showed low contact toxicity (ranging from 0 to 51%) against the two weevil species at the tested concentrations (ranging from 11.58 $\mu\text{g}/\text{cm}^2$ to 1158.08 $\mu\text{g}/\text{cm}^2$) on filter papers. In choice tests, corn treated with 0.10% or higher and wheat treated with 0.5% nootkatone or higher had significantly fewer maize or rice weevils compared with the solvent only treated control, indicating a repellent effect. The repellency percentage ranged between 46.3 and 93.1% against maize weevils and 39.2–67.2% for rice weevils.