

INTEGRATION OF CONTROLLED ATMOSPHERE AND LOW TEMPERATURE FOR DISINFESTATION AND CONTROL OF DRIED FRUIT BEETLES

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Nitidulid beetles are important pests of dried fruits and particularly of dates at the time of harvest. Upon arrival at the packing stations dates are disinfested by fumigation. This treatment serves a twofold purpose of stimulating the active insect stages (larvae and adults) to abandon the fruits and also killing the insect population to control field infestations.

Experiments were carried out to investigate the influence of different modified atmospheres and low pressures alone in causing Nitidulid beetles to emigrate from infested dried fruit for which dates served as a model. The most effective treatments were pressures of 50 and 100 mm Hg and 1.4 and 2.8% oxygen in air, all of which caused over 80% of the initial insect populations to emigrate from the fruit after 4 h of exposure.

However, to enable modified atmosphere treatments to replace fumigation, long exposure times are necessary to achieve complete mortality. An alternative approach studied was storage at low temperatures for subsequent control of such infestations. Exposure to -5°C caused relatively slow kill. Pupae were the most resistant stage, about 90 h was needed to produce 99% kill of *Carpophilus mutilatus* Er and *C. hemipterus* L. Exposure to -18°C caused very rapid kill of both species, LT₉₉ of all stages being obtained within 2.25 h.