

عنوان مقاله:

Comparative efficacy of controlled atmospheres against two stored product insects

محل انتشار:

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خلاصه مقاله:

Effect of controlled atmospheres (CAs) at various concentrations of CO₂, N₂ and O₂ on the lethal times of *Tribolium castaneum* and *Trogoderma granarium* was investigated at ۲۰ and ۳۰ °C. Experiments were performed using a recirculatory multi-flask apparatus. The results revealed that, the shortest times (۰.۱, ۰.۳ and ۰.۹ day for adults, larvae and pupae, respectively) required to obtain ۵۰% mortality of *T. castaneum* stages were at ۱۰۰% CO₂ followed by ۷۵% CO₂, ۵۰% CO₂, ۹۹% N₂ + ۱% O₂ and ۲۵% CO₂, at higher tested temperature (۳۰ °C). Adults were more sensitive to the different treated CAs than larvae, while pupae were the most tolerant stages. Diapausing larvae of *T. granarium* were the most tolerant to all treated CAs at tested temperatures. The effectiveness of CAs to decrease its LT_{۵۰} values were ۱۰۰% CO₂ followed by ۹۹% N₂ + ۱% O₂ and ۹۸% N₂ + ۲% O₂ at ۳۰°C. It may be concluded that diapausing larvae are more difficult to control with CAs than normal larvae. A treatment with N₂ relying on the absence of O₂ will take a longer treatment time to control the diapausing larvae and in late winter, exposure times needed for control may be even longer. If CAs were to be applied under such circumstances, a high content of CO₂ would be the best option to achieve control in a comparatively short time.

کلمات کلیدی:

Tribolium castaneum, Controlled atmosphere, *Trogoderma granarium*, Recirculatory multi-flask apparatus

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