

LOW OXYGEN DISINFESTATION OF GRAIN: EXPOSURE PERIODS NEEDED FOR HIGH MORTALITY

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Cultures containing all developmental stages of the three common grain pests *Rhyzopertha dominica*, *Sitophilus oryzae* and *Tribolium castaneum* were exposed at 25°C to low oxygen concentrations in the range 0-3% oxygen (in nitrogen). *T. castaneum* was the most susceptible of the three species and it was possible to obtain very high mortality (>99.9%) with exposure to 3% oxygen for 30 days. *R. dominica* and *S. oryzae* only showed very high mortality, in less than 50 days, with atmospheres containing less than 1% oxygen while 1 to <2% oxygen for 50 days caused high mortality (>90%) and 2 to 3% oxygen for 50 days caused some mortality(>50%). On the basis of these results it is concluded that low oxygen atmospheres of more than 1% oxygen may have some specific roles in grain treatment, however the incomplete kill within 50 days and the slow rate of action will preclude their use on many occasions.