

Title The effect of relative humidity on the efficacy of the diatomaceous earth Protect-It™ against *Liposcelis entomophila* (Enderlein) (Psocoptera: Liposcelididae).

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Abstract

This paper examines the effect of relative humidity (55, 65, 71 and 76% r.h.) on the efficacy of the diatomaceous earth Protect-It against *Liposcelis entomophila* adults. The diatomaceous earth was applied as a surface treatment at 0.3, 0.7, 1.0, and 3.0 g/m². Insects were held at 25 plus or minus 1 deg C for 1 to 8 days before mortality was assessed. As predicted, lower relative humidities, higher concentrations of diatomaceous earth or longer exposures increased mortality. At 55% r.h., 100% mortality occurred at all concentrations after 4-day exposure. At 65% r.h., the results were similar to those at 55% r.h. At 71% r.h., 100% mortality occurred only after 4 days at 3.0 g/m², and after 6 days at 1 g/m². At 76% r.h., 100% mortality was never obtained with the 8-day tests, although mortalities rose between 69 and 92%. We believe the diatomaceous earth would be useful to reduce populations of *L. entomophila* and other stored-grain insect pests in empty granaries and in the top and bottom layers of the grain.