

Title Maintaining DNA quality in stored-grain beetles caught in Lindgren funnel traps
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Abstract

Lindgren funnel traps baited with aggregation pheromones are effective tools for monitoring flight activity in the red flour beetle (*Tribolium castaneum*) and lesser grain borer (*Rhyzopertha dominica*). Beetles caught in these traps are a potentially valuable resource for genetic studies, provided their DNA remains intact. In a series of laboratory and field experiments we evaluated a range of liquid preservatives and dry preservation to determine which approach would provide the highest yield of quality DNA for use in molecular analyses after short-term preservation. Preservatives containing propyleneglycol produced an initial decline in PCR yield from extracted DNA in both beetle species after 3 days exposure, but subsequent declines in yield were comparatively slow. Water and phosphate-buffered saline provided good short-term preservation, but the rate of decline accelerated as exposure time increased. Dry preservation (achieved using a section of dichlorvos pest strip as a killing agent) provided the best level of DNA preservation for both species for up to 14 days provided humidity remained low. Hygroscopic water uptake significantly reduced the effectiveness of propyleneglycol as a DNA preservative. Whilst propyleneglycol is known to be an effective long-term DNA preservative, our results indicate that for typical pheromone trap deployment periods of up to 7 days, *T. castaneum* and *R. dominica* are best preserved dry if this is operationally feasible.