

Efficiency comparison of three attractant products against webbing clothes moth *Tineola bisselliella* (Hummel) (Lepidoptera: Tineidae) using an adapted four arms olfactometer

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1. Introduction

In patrimonial stock, webbing clothes moth (*Tineola bisselliella* (Hummel), Lepidoptera: Tineidae) larvae may feed year round on woollen textiles and other animal-based products, such as furs and carpets causing economic depreciation of goods disproportionate to the physical damage. Depreciation caused by keratophagous insects including webbing clothes moth approximates one billion dollars annually in the United States alone (Metcalf and Metcalf, 1994). A number of pheromone based attractants can be found on the market and we compared the efficiency of three of them against *T. bisselliella*.

2. Methods and materials

Webbing clothes moth were reared in plastic boxes with mesh lids at 25 ±1°C, 40-60% r.h. and a 12L:14D inverted photoperiod. Larvae were provided with untreated, untanned, and dry rabbit's pelts with hair (Fig. 1). Every day adult webbing clothes moths were collected and their sex determined through the presence of claspers and aedagus (male) or ovipositor (female).



Figure 1 Untreated, untanned and dry rabbit's pelts with hair.

We tested three lures (Fig. 2) : Webbing clothes moth “bullet lure”, Insect limited Inc 16950 Westfield, Park Road, Westfield, IN 46 074 USA; CAT-QLURE- wcm Russel IPM®, Unit 68, Third Avenue, Deeside Park, Deeside, Flintshire, CH5 2LA United Kingdom; Finicon® FINICON Sticky Pads, Each attractant are supposed to contain webbing clothes moth's sex pheromones, i.e koiganal I ((E)-2-octadecenal) and koiganal II ((E,Z)-2,13-octadecadienal), but they may also contain semiochemical attractants of larval habitat, food, or male aggregation pheromones.



In order to estimate the efficiency of the three attractants, experiments were assessed in a closed arena olfactometer with four arms without air flow, derived from the Takacs et al. (2001) olfactometer. The arena at the end of each arm contained a sticky trap and one of the three attractants or an empty microcentrifuge tube as a control (Fig. 3). For the five replicates, each attractants were randomly placed and 10 male moths (1 to 4 d old) were released from the petri dish in the center of the main arena. After 24 h, the number of trapped moths for each attractant was noted.

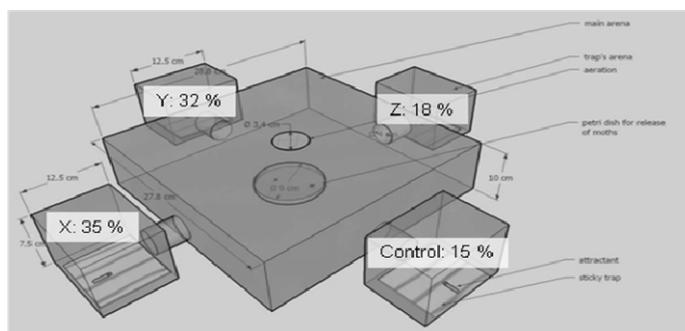


Figure 3 Olfactometer used for tests and percentage of webbing clothes moth trapped for each bait.

3. Results

We noted some trends between the different lures (Fig. 3), but there was no statistical difference between the lures.

4. Discussion

The developed olfactometer can highlight differences in efficiency of different products. Efficacy studies are still ongoing, and we will compare the attraction of males in the presence of products or virgin females. Actually, two products are able to trap one third of the population of insects, which is important but not sufficient to reduce damage enough.

References

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