# Behavioural response of the predatory mite *Phytoseiulus persimilis* in inert materials of application Dennis Wendorf, Helga Sermann, Carmen Büttner, Peter Katz\*

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### **INTRODUCTION**

A large-scale application of the predatory mite *Phytoseiulus persimilis* for use in the biological control of spider mites involves specific problems. To mechanize the method of application, an inert material for transport and distribution of the predatory mites must be provided. This material has to hold the mites for the duration of the application and must be suitable for use in a mechanical procedure. In experiments, the behaviour of *P. persimilis* was tested in different materials.

### MATERIALS AND METHODS

10 ml of the application material (0%, 5%, 10% or 20% humidity) were put into a petri dish. 50 mites *P. persimilis* were positioned centrally on this material and immediately covered with additional 10 ml of the same material. The effect on the emigration of the mites was observed after 5, 10, 15, 30 and 45 minutes by controlling the number of individuals that vacated the material.

Material used in the laboratory studies: 1. buckwheat husks; 2. millet husks; 3. wood shavings (0.8–2.0 mm); 4. Vermiculite (1-3 mm); 5. spelt husks

In a second experiment, small transparent pipes  $(\phi = 3.7 \text{ cm}, h = 12 \text{ cm})$  were filled with 10 ml of the application material (10% humidity); 50 mites were centrally positioned and immediately covered with 40 ml of the same material. The pipe was closed with gauze and stored for 2 h,

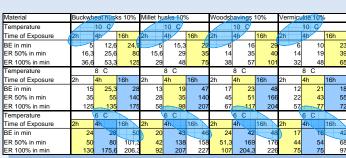
4 h and 16 h at 10°C, 8°C and 6°C. The time until resumption of movement and the moment of emigration after the cooling was recorded quantitatively.

# <u>RESULTS</u> Experiment I

Emigration from dry materials

was completed within 15 minutes. Emigration from dry buckwheat husks and spelt husks was especially fast.

The humidity of the material the extended duration of lifetime in the material. In this Respect Millet husks and wood shavings showed the most favourable effect at 10% humidity.



BE in min = Begin of Emigration in minutes after cooling; ER 50% in min = Emigration of 50% of mites after cooling; ER 100% in minutes = Emigration of 100% of mites after cooling

## **Experiment II**

In general brief (2 h) and moderate cooling (10°C) was not effective.

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The strongest effect on delaying the resumption of movement was recorded after cooling for 16 h at 6°C. The emigration was delayed by up to 40-50 minutes

## CONCLUSION

The time of remaining in the dry materials proofed to be relatively short. Through increasing the dampness of the materials to 10% in combination with the effect of cooling the time can be prolonged considerably. The effect of slowing down the mobility of the mites in the material has to be judged positively in respect of a mechanised application. Whether this effect is sufficient regarding the mechanised application process depends on the chosen form of application technology. Further factors that might have an impact on the mobility and distribution in the materials are still beeing examined.