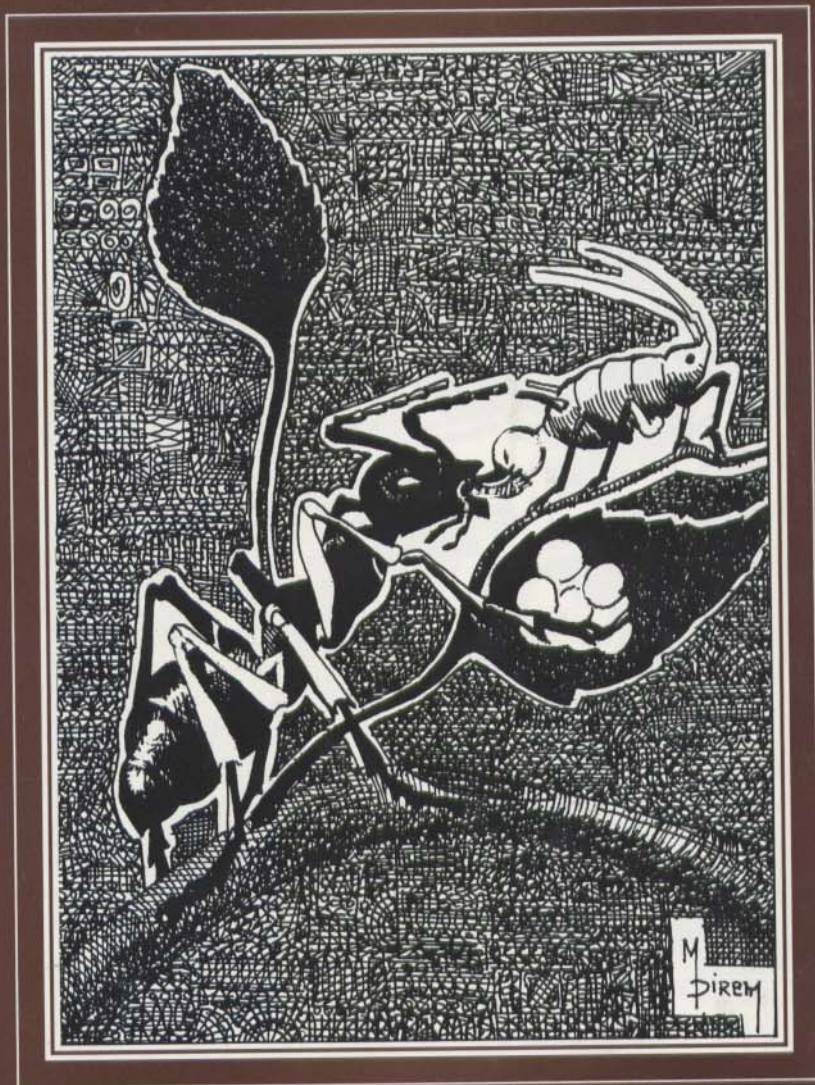


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Edited by
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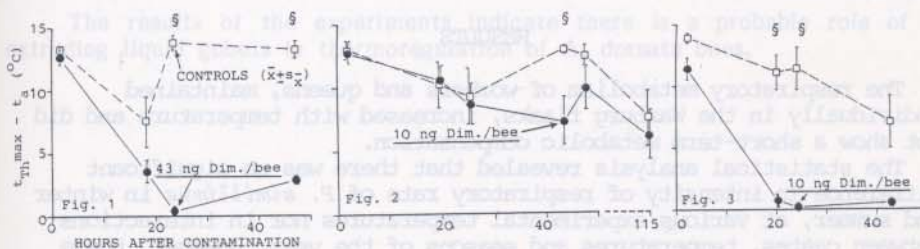
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Effect of Roxion-S (Dimethoate) on the Body Temperature of the Honey-Bee

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For the evaluation of sublethal effects of insecticides on *Apis mellifera carnica* POLLM. the body temperature was taken as a bioindicator. **METHODS:** Foragers were after 1 hour of stravation individually fed with 30 μ l 1M sucrose-solution, which was contaminated with various amounts of Roxion-S (Celamerck, 400 g Dimethoate/4l Roxion-S). Then they were kept isolated in "Liebefelder-boxes" with 1M sucrose-solution available. In each experiment the surface temperatures of 10 contaminated bees and 10 controls were measured by an AGA 782 SW infrared scanner through an IR-transmissive foil. For thermographic measurements on bees see SCHMARANZER 1983,1984; STABENTHEINER & SCHMARANZER 1986. The band-emissivity (3,5-5,6 μ m) of the heated intact thorax is 0,99 \pm 0.028(s) (STABENTHEINER & SCHMARANZER in prep.). Absolute measurement accuracy: $\leq + 0,35$ °C.

RESULTS: The highest thoracic temperatures ($t_{Th,max}$) reached by poisoned bees and controls within the observation period of 2 min (referred to the ambient temperature $t_a = 23,0-26,5$ °C) were compared. Already 5 hours after contamination with 70ng Dimethoate/bee the treated animals had up to 16 °C lower mean $t_{Th,max}$. The animals fed sublethally with 43ng Dim./bee showed up to 13 °C lower mean $t_{Th,max}$ (Fig.1-3, §: $P < 0,02$, U-test).



DISCUSSION: The sublethally poisoned bees were strongly irritated in their thermal behaviour. Their cooler thoraxes indicate reduced flight muscle activity and thus an abnormal diminished metabolic rate. Body temperature could be shown to be a very sensitive parameter for detection of disease in intoxicated honeybees.

REFERENCES: SCHMARANZER S 1983 Thermovision bei trinkenden und tanzenden Honigbienen, VerhDtschZoolGes, 319. SCHMARANZER S 1984 Körpertemperaturmessungen mittels Thermovision bei Honigbienen während der Fütterung und des Tanzes, "International Symposium in Memory of Dr. Franz Sauberer", Universität für Bodenkultur Wien, 51-53. STABENTHEINER A & SCHMARANZER S 1986 Thermografie bei Bienen: Körpertemperaturen am Futterplatz und im "Bienenbart", VerhDtschZoolGes, in press.

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