PUPATION DEPTH OF *MICROCTONUS* SPP.

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Microctonus aethioides and *M. hyperodae* are introduced biocontrol agents for exotic weevil pests in New Zealand. Understanding how environmental factors affect their phenologies is integral to defining their impact on target and non-target hosts. To study where in the soil profile these parasitoids pupate, parasitised weevils were caged either above intact soil cores containing vegetation and litter from pasture and lucerne, or above crumbled bare soil. After parasitoids had emerged from their hosts and pupated, the substrates were searched to locate pupation sites. With handsorting/ flotation, 3 of 17 *M. hyperodae* pupae were found in the top 10 mm of soil cores, and 1 each at 10-15, 20-25, 35-40 and 45-50 mm. A further 10 were at indeterminate depths within 0-30 mm. Intact cores were searched by microscope (64X), and 28 of 32 *M. hyperodae* and 6 of 7 *M. aethioides* were found in surface litter. The others were in cracks to 25 mm. Initial observations with crumbled soil showed pupation had occurred, but pupation depth was often undeterminable. Microscopic searching revealed two *M. hyperodae* and one *M. aethioides* barely covered by soil. Pupation of both parasitoid species apparently occurs at or close to the soil surface suggesting that pupal survival and development could be strongly influenced by weather.

INFLUENCE OF MALE DENSITY ON REPRODUCTIVE FITNESS OF FEMALE RICE WEEVIL, *SITOPHILUS* *ORYZAE* L. (COLEOPTERA: CURCULIONIDAE)

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Rice weevils (*Sitophilus oryzae*) are important stored product pests of grains throughout the world and can lead to complete rejection of seed lots. Fecundity and fertility of females are central to their ability to populate and destroy grains. Pest control with insecticides on food grain crops is undesirable, causing rejection of seed lots that contain residues. Therefore, any information contributing to alternative management or enhancement of existing control techniques is important. Behavioural factors have been found to influence fecundity and fertility of this pest. A recent study found a reduction in fecundity and fertility in females that are exposed to multiple males. However, the mechanism behind this is unknown. This experiment examined how male density affected female feeding, copulation and oviposition in *S. oryzae* under three sex ratios, 1:1, 5:1 and 10:1 (male:female). Results show that copulation duration significantly increased with increasing male density ($P < 0.001$). Female feeding and oviposition duration significantly decreased with increasing male density ($P < 0.001$). It is suggested that high male density reduces time for females to feed and oviposit, resulting in lower reproductive potential in females.