

Semiochemical-baited traps for scarab pests damaging fruits and blossoms

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There are several scarab pests in Europe which may cause significant damages to orchard cultures, vineyards or ornamental plants. In case of several of these species damage caused by adult beetles is more important than larval damages. Based on the study of the chemical communication of several such scarab pests, our laboratory developed semiochemical-baited traps for the capture of the adult beetles.

Anomala spp.

Traps developed for *Anomala vitis* / *A. dubia* (Coleoptera, Scarabaeidae, Rutelinae) contain (E)-2-nonen-1-ol which is a powerful male attractant for both species (Tóth et al., 1994). Traps for *A. solidata* are baited with the sex attractant (R,Z)-5-(-)-oct-1-enyl)-oxacyclopentan-2-one (Tóth et al., 2003b, Mircheva et al., 2004). All three species are known to cause leaf damage in orchards and vineyards. More recently, *A. vitis* has been reported also to feed on ripening peaches, making the fruit non-marketable (Voigt et al., 2000, 2005).

Epicometis (Tropinota) hirta

A synthetic floral attractant has been developed and optimized for catching *Epicometis (Tropinota) hirta* (Coleoptera, Scarabaeidae, Cetoniinae), as the mixture of cinnamyl alcohol and (E)-anethol (Tóth et al., 2003a, 2004, Schmera et al., 2004, Mircheva et al., 2004). The adults of *E. hirta* feed on the reproductive parts of flowers and may cause significant damage to blossoming orchard trees and many other plants. Also, severe damage on ripening strawberries and similar berry fruits have been reported in outbreak years.



CSALOMON VAREB3 funnel trap with bait for *E. hirta* (containing 600 cinnamyl alcohol and 1000 µg anethol attractant)



Photo I. Sivcev
Mass trapping trial on *E. hirta* in industrial strawberry plantation

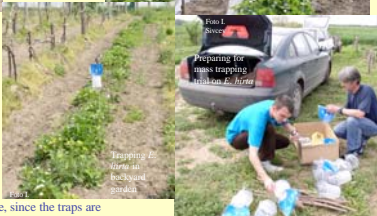
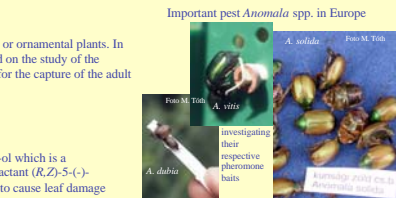
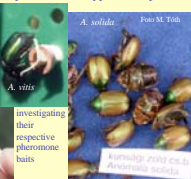


Photo I. Sivcev
Preparing for mass trapping trial on *E. hirta*

Photo I. Sivcev
Trapping of *E. hirta* in backyard garden



Important pest *Anomala* spp. in Europe



Cetonia a. aurata, Potosia cuprea and Oxythyrea funesta

A multicomponent floral attractant [containing (E)-anethol, 3-methyl eugenol and 1-phenyl-ethanol] has been optimized, which attracts *Cetonia a. aurata*, *Potosia cuprea* and *Oxythyrea funesta* (Coleoptera, Scarabaeidae, Cetoniinae) (Tóth et al., 2005). These are known flower devastators and may cause in draught years also severe fruit damage to ripening fruits (i.e. peaches).



CSALOMON VAREB3 funnel trap with bait optimized for *Cetonia aurata* and *Potosia cuprea*

Mass trapping

Perimeter trapping experiments to control *A. vitis* and *A. dubia* resulted in keeping the fruit damage levels below the economic threshold in peach orchards (Voigt and Tóth, 2000, 2002, 2004).

Mass trapping for *E. hirta* (in strawberries) or for *C. aurata* and *P. cuprea* (in peaches) was capable of reducing fruit damages to an acceptable level (Sivcev et al., 2005, Voigt et al., 2005).

A possible explanation of the surprisingly successful mass trapping trials for both rutelins and cetoniines may be that in contrast to the widely used pheromone traps for moth spp., in this case, since the traps are capturing the damage-causing life stage, the adults, removal of captured insects from the population had a direct and parallel decreasing effect on the damages caused.

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Photo M. Tóth

In case of cetoniines varying colour preferences were observed. Traps combining both the chemical attractants plus the most favourable visual cues (preferred colour) were most efficient in capturing the respective target species (Tóth et al., 2005).

Fig: Catches of cetoniines in traps of different colour, with or without chemical bait. B=blue, G=greenish fluorescent yellow, T=transparent, W=white, Y=yellow. (After: Tóth et al., 2005)

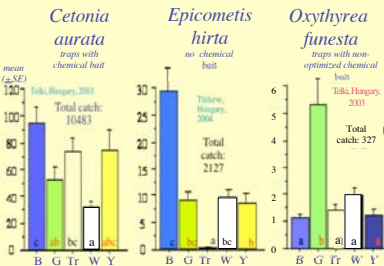


Photo M. Tóth

Funnel traps of different colors tested by colour preference tests on cetoniines



CSALOMON VAREB3 funnel trap with bait optimized for *Cetonia aurata* and *Potosia cuprea*