

**PRELIMINARY RESULTS ON THE EFFECT OF TRANSGENIC APPLE ENCODING A CYSTEINE PROTEINASE INHIBITOR AGAINST *MELOLONTHA MELOLONTHA* L. (COLEPTERA SCARABAEIDAE) ON NON TARGET ARTHROPODS**

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*Malus domestica*., resistance gene, Cysteine Proteinase Inhibitor, stress tolerance, non target effects

Plants have both structural and biochemical defence strategies against pathogens. However, many of the most common commercial apple varieties are susceptible to various diseases and the disease control is obtained by application of pesticides. One approach to improve plant defences against a particular pathogen has been made possible by genetic engineering is to use genes retrieved from other organisms.

Apple (*Malus domestica* Borkh.) genetic transformation was performed with the AtCys gene, encoding a Cysteine Proteinase Inhibitor (CPI) derived from *Arabidopsis thaliana*, to control the larvae of the cockchafer (*Melolontha melolontha* L.).

The transformation was operated on the variety M9, normally employed as a rootstock for other apple cultivars, as the larvae, affecting the roots of young plants, are the most armful stage of this phytophagous. The transgenic protein, expressed in the rootstock, is not expected to reach the grafted aerial part of the plant. Studies aimed at the confirmation of AtCys inhibitory action are in progress both on target and non-target insects.

Moreover we want to investigate the potential impact of the complete GM plant (expressing the CPI in all parts) and the specificity of the inhibitor on other secondary phytophagi (aphids and mites). From preliminary results, no negative effects were recorded on *Myzus persicae* Sulzer (Hemiptera: Aphididae) and on *Tetranychus urticae* Koch. (Acarina, Tetranychidae).