

Physiology

Effect Of Reduced Water Supply On Aphid Physiology : A Proteomic Approach On Peach-Aphid Interaction

Jaime A. VERDUGO, Jean-philippe LACROZE, Marie-helene SAUGE, Sophie VANDERMOTEN, Ramirez C. CLAUDIO and Frederic FRANCIS

Functional and Evolutionary Entomology, University of Liege - Gembloux Agro-Bio Tech, Belgium, Ecologie de la Production integree, Unite et Systemes de culture Horticoles, INRA, France, Laboratorio Interacciones Insecto-Planta, Universidad de Talca, Chile

E-mail : jverdugo@utalca.cl, jean-philippe.lacroze@avignon.inra.fr, marie-helene.sauge@avignon.inra.fr, Sophie.Vandermoten@ulg.ac.be, clramirez@utalca.cl, Frederic.Francis@ulg.ac.be

Whether the effect of water lacking was mainly studied on plant responses, very few investigations were developed on the herbivore responses to water deficiency in host plant. Here, a proteomic approach related to clones of the green peach aphid *Myzus persicae* which was exposed to normal and water deficient irrigation was studied. After 48 hours, as compared to aphids fed on control plants (well-watered), the aphids fed under water-deficit exhibited several proteins up-regulated. Most of the proteins exhibiting changes were involved in energy metabolism (as Regulator of G-protein signaling 7-like and RNA 3' terminal phosphate cyclase), or were associated to cytoskeleton functionality (as actin related protein 1 and F-actin capping protein subunit beta). One of these proteins was significantly down-regulated, the mitochondrial-processing peptidase, which is associated with aphid response to toxicity. Moreover, some proteins from the *Buchenra aphidicola* were found to be deregulated. Presence of only primary symbiont was assessed by PCR approach. In a parallel experiment using similar treatments as in the proteomic study, the population rate of growth (PGR) of aphids were determined. These findings suggested that plant under water deficit suffers of physiological changes which in turn elicit (or "transferred to") a significant proteomic changes on aphids fed on them.

Keyword : water stress, aphid, proteomics

