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Department of Soil, Plant and Food Sciences - UNIBA Aldo Moro DiSSPA - Entomology and Zoology Section, Via Amendola, 165/A - 70126 BARI - ITALY
http://www. uniba. it/ricerca/dipartimenti/disspa
Tel. +39/0805442874 - +39/0805442880
E-mail: entomol@uniba. it
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C. ABBATE, S. TOSCANO, R. ARCIDIACONO, D. ROMANO, A. RUSSO, G. MAZZEO

Dipartimento di Agricoltura, Alimentazione e Ambiente (Di3A), University of Catania, Catania, Italy.

Induced responses of *Bougainvillea glabra* Choisy (Nyctaginaceae) against *Phenacoccus peruvianus* Granara de Willink (Hemiptera: Pseudococcidae) attack: preliminary results.

ABSTRACT

Plants are frequently attacked by herbivores and therefore have acquired constitutive and induced defenses during the course of their evolution. Primary and secondary metabolites have been implicated in plant defense against insect pests. Oxidative stress, resulting from the generation of reactive oxygen species (ROS), such as superoxide, hydrogen peroxide andhydroxyl radicals, is a common phenomenon in many plant defense against insect attack. Catalase, which degrades H_2O_2 into water and oxygen, is one of the major involved antioxidant enzymes. The effectiveness of oxidative defense system in plants can be measured by the activities of antioxidant enzymes and by the levels of non-enzymatic antioxidants. Malondialdehyde (MDA) is generally taken as a tool to assess the severity of the oxidative stress and the degree of plant sensitivity towards ROS induced oxidation. Proline may protect protein structure and membranes from damage, and reduce enzyme denaturation.

As well, phenylpropanoid pathway is an important pathway to produce secondary plant metabolites and phenylalanine ammonia lyase (PAL), as a key enzyme, catalyzes the deamination of phenylalanine to cinnamic acid, the entry and key regulatory step into the phenylpropanoid pathway.

In the present study, plants of *Bougainvillea glabra* Choisy (Nyctaginaceae) were artificially infested with the obligate phloem-feeding pest *Phenacoccus peruvianus* Granara de Willink (Hemiptera: Pseudococcidae), introduced to Sicily and Mediterranean basin since 2010, and compared with control, uninfested plants. Leaf samples were taken at 2, 6, 12, 24, 48, 96, 144 hours after infestation and also after a longer period, many months later, to monitor the plant response. Pro, MDA, Chl_a, Chl_b and Chl_{a+b}, Car, CAT and PAL activities were measured at each sampling date.

Proline, MDA, CAT and PAL assays showed a higher content at longer period in the infested samples. Regarding Chl, collected data didn't show any significant difference between infested plant and control.

However, these preliminary results appear significant in understanding of Bougainvillea plant defense against mealybugs because any information are not reported in the literature. Further analyses concerning other enzymatic and molecular responses are necessary.

Keywords: Ornamental plant, Mealybug, Proline, Chlorophyll, Enzymatic assays.

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