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Improved resistance in strawberries through the use of acibenzolar-S-methyl and harpin

José Abramo Marchese[1]; Vanessa Nataline Tomazeli[2]; Moeses Andrigo Danner[1]; Anelise Tessari Perboni[3]; Taciane Finatto[1]; Lucas Vinicius Dallacorte[1]

[1]UTFPR – Universidade Tecnológica Federal do Paraná, Campus Pato Branco.Via do Conhecimento s/n, km 01, CEP: 85503-390, Pato Branco. PR, Brazil, abramo@utfpr.edu.br, moesesdanner@gmail.com, tfinatto@gmail.com, lucasdallacorte@alunos.utfpr.edu.br.
[2]Rio Grande do Sul State Secretariat for the Environment and Infrastructure, 90020-020 Porto Alegre, RS, Brazil, vanetomazeli@hotmail.com
[3]UTFPR – Universidade Tecnológica Federal do Paraná, Campus Dois Vizinhos. Estrada para Boa Esperança, km 04 - Zona rural, CEP: 85660-000, Dois Vizinhos, PR, Brazil, aneliseperboni@utfpr.edu.br

ABSTRACT

Induced resistance can lead to the direct activation of defenses, but can also lead to the priming of cells, resulting in stronger elicitation of those or other defenses, following pathogen attack. The objective of this study was to evaluate the effect of acibenzolar-S-methyl (ASM) and harpin protein, applied pre-harvest, in the induction of resistance in strawberry to pathogens and mites. The experiment was conducted in a greenhouse, in a randomized block design with three replications. The treatments with the elicitors harpin protein, harpin ab protein and ASM were established by applying the commercial products Messenger (3 % ai) at a dose of 0.75 g L^{-1} , ProAct (1 % ai) at a dose of 2.50 g L^{-1} and Bion 500WG at a dose of 0.0005 kg^{-1}, respectively. Five sprays of the elicitors, with 15-day intervals between each, were performed from 60 to 120 days after transplantation. In addition to this, a spray treatment was applied containing distilled water to act as a control treatment. Twenty-four hours after the second application of the elicitors, we proceeded with the inoculation of the fungus *Botrytis cinerea* Pers ex Fr (108 spores L^{-1}). The application of ASM and harpin protein induced resistance in the strawberry plants, resulting in an increase in phenylalanine ammonia-lyase activity and total phenol production, while reducing leaf blight and grey mould. The application of harpin protein also caused a reduction in mite damage, while increasing photosynthetic rate and the production of marketable fruits. The elicitors ASM and harpin, applied pre-harvest, can be used as part of the integrated pest management of diseases and pests of strawberry.

KEYWORDS: *Fragaria* x *ananassa*, *Botrytis cinerea*, Systemic acquired resistance, Induced systemic resistance.

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