368 – PLANT INNATE IMMUNITY IN STRAWBERRY INDUCED BY PATHOGEN-ASSOCIATED MOLECULAR PATTERN (PAMP)

JOSÉ ABRAMO MARCHESE; VANESSA NATALINE TOMAZELI; SILVIA SCARIOTO; MARCOS VILYPALADINI; EMANUELI PEREIRA DA SILVA; LUCAS VINÍCIUS DALLACORTE

UNIVERSIDADE TECNOLÓGICA FEDERAL DO PARANÁ, PATO BRANCO-PR

INTRODUÇÃO

Gray mold caused by *Botrytis cinerea* is an important disease in strawberries. This fungus causes significant economic losses since it attacks plants and fruits. In this context, this work aimed to evaluate the effectiveness of Acibenzolar-S-methyl (ASM) and Harpin protein in pre- and post-harvest as inducers of resistance in strawberries to *B. cinerea*.

METODOLOGIA

Strawberry plants (Fragaria x ananassa) from 'Aromas' and 'Camarosa' cultivars were grown in a greenhouse and evaluated in a laboratory. Two elicitors: four doses of Harpin [commercial product ProAct™ (0, 100, 200 and 300 mg L^{-1}, 1% a.i.)] and five doses of ASM [commercial product Bion® (0, 100, 200, 300, and 400 mg L^{-1}, 50% a.i.)] in pre- and post-harvest applications were assessed. Yield parameters of strawberry, *B. cinerea* incidence and injured area in fruit, fruit firmness, CO_2 assimilation rate, and phenylalanine ammonia-lyase (PAL) activity were analyzed.

RESULTADOS E CONCLUSÕES

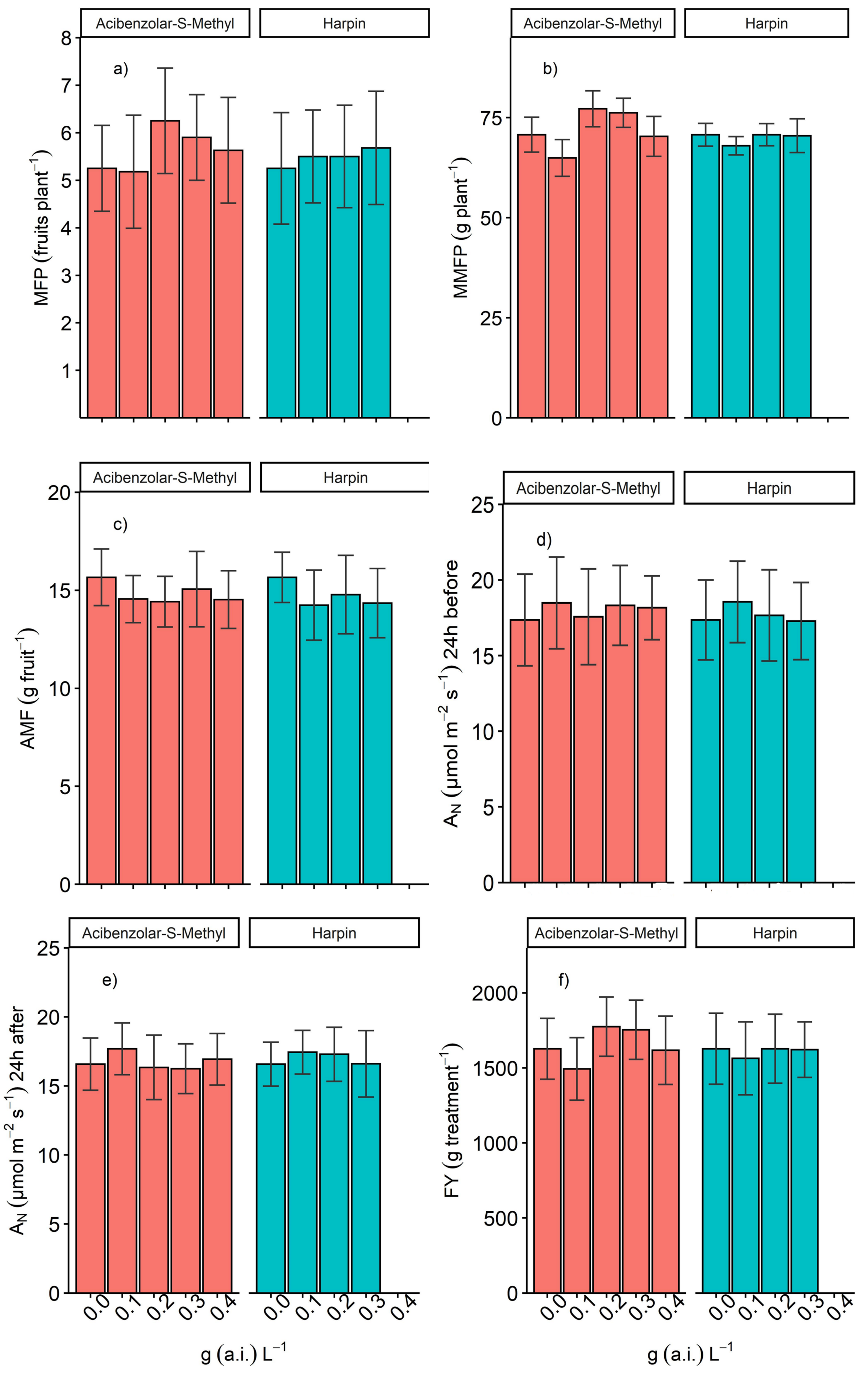

Fig. 1 Number of marketable fruits per plant (MFP) (a), mass of marketable fruits per plant (MMFP) (b), average mass of marketable fruits (AMF) (c), net photosynthesis (A) 24 h before (d) and after (e) the treatment (cv. Aromas), and fruit yield (FY) (f) of strawberry plants according to the application of Acibenzolar-S-Methyl (ActiGard®) and Harpin αβ (ProAct™). The black bars represent the standard deviation

Table 1- Effect of Acibenzolar-S-methyl (ASM) and Harpin treatment (postharvest) on disease incidence, control efficiency and injured area in strawberry fruits (cv. Camarosa) inoculated with *Botritis cinera*.

Treatment	Disease incidence (%)	Injured area (cm²)	Control efficiency
Control	97.2 ± 3.11 a	1.37 ± 0.82 a	-*
Harpin protein	51.4 ± 1.98 b	0.20 ± 0.17 b	67.36 ± 13.37
Harpin αβ protein	63.9 ± 5.52 b	0.36 ± 0.29 b	81.85 ± 23.75
ASM	63.9 ± 8.34 b	0.43 ± 0.21 b	68.85 ± 2.15
Inoculation forms			
Wounded	70.8 ± 4.21 ^{ns}	0.64 ± 0.06 ^{ns}	84.69 ± 20.12 ^{ns}
Unwounded	67.3 ±5.12	0.54 ± 0.18	60.68 ±12.51

Means followed by the same letters in the columns do not differ from each other by the Tukey test at a 5% probability.

Table 2- Effect of Acibenzolar-S-methyl (ASM) and Harpin treatment (post-harvest) on pulp firmness and PAL activity in strawberry fruits (cv. Camarosa) inoculated with *Botritis cinera*.

Treatment	Pulp firmness (N)	PAL (Uabs min^{-1} mg protein^{-1} x 10^3)
Control	6.35 ± 2.51 b	5.54 ± 0.86 b
Harpin protein	11.03 ± 2.46 a	6.17 ± 0.76 ab
Harpin αβ protein	9.28 ± 3.48 ab	7.57 ± 0.73 a
Acibenzolar-S-methyl	7.15 ± 2.23 ab	6.24 ± 1.08 ab
Inoculation forms		
Wounded	7.16 ± 2.00 ^{ns}	6.21 ± 0.96 ^{ns}
Unwounded	9.76 ± 3.84	6.55 ± 1.25

Means followed by the same letters in the columns do not differ from each other by the Tukey test at a 5% probability.

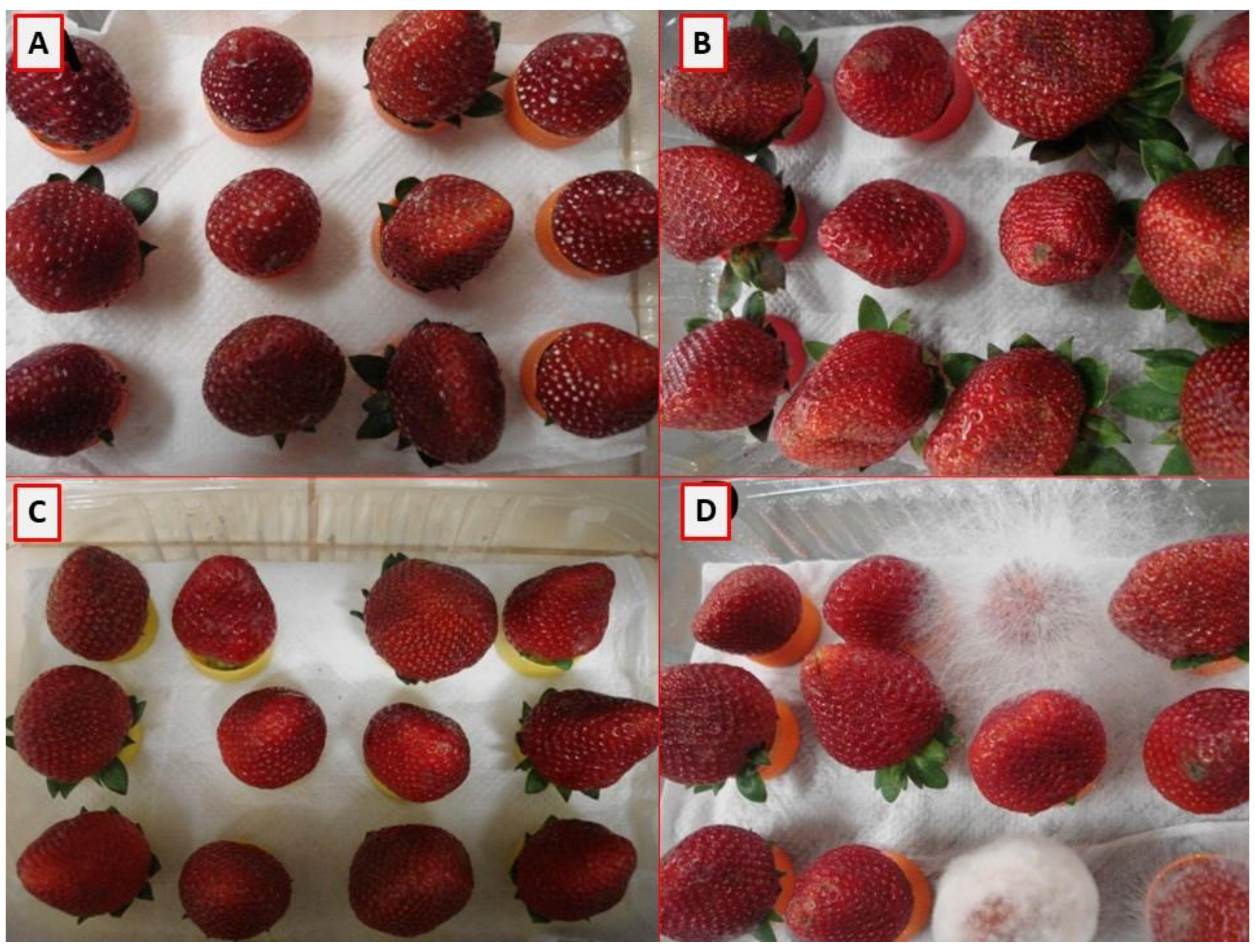

Fig. 2 - Visual comparison of rot in strawberry fruits treated with Acibenzolar-S-methyl (ASM) (a), Harpin αβ (b), Harpin (c), and the control treatment (d)

Elicitors application in pre- and post-harvest conditions promoted a decrease of *B.cinerea* incidence and injured area in strawberry fruits. The results suggest that Harpin and ASM treatment show a significant impact on strawberry fruit disease, presenting a potencial use to increase post-harvest storage. The control may be associated with the PAL induction, responsible for inducing defense responses. Harpin and ASM represent a promising alternative to synthetic fungicides for *B. cinerea* control during post-harvest storage.

AGRADECIMENTOS

PPGAG UTFPR
CNPq
syngenta
CAPES