

Title Multiple pre-harvest treatments with acibenzolar-S-methyl reduce latent infection and induce resistance in muskmelon fruit

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Abstract

Muskmelons (cv. Yindi) were sprayed with 100 mg a.i. L⁻¹ acibenzolar-S-methyl (ASM) four times at four different stages: flowering, the young fruit, the fruit enlarging period and the netting periods. Analyses were performed 1 week after each ASM treatment. Results showed that the incidence of total latent infection (caused by all observable fungi) and the incidence of relative latent infection (caused by *Alternaria alternata* or *Fusarium* spp.) were significantly lower in sprayed muskmelons than in the control fruit. Moreover, the reduction in the incidence of latent infection was greater with increased ASM treatments. The control of latent infection by ASM resulted in reduced incidence of postharvest decay and improved fruit appearance and firmness after 10 d of storage. In addition, the activities of peroxidase, phenylalanine ammonia lyase, β -1,3-glucanase and chitinase increased significantly in treated muskmelons. ASM treatments also contributed to the accumulation of phenolic compounds, lignin and flavonoids. Increases in defense-related enzyme activities and in particular metabolite levels were observed in plants with more ASM treatments. These results suggest that multiple ASM treatments could induce disease resistance in muskmelons and could be an ideal strategy for preventing latent infection in fruits.