

**Title** Postharvest jasmonic acid treatment of sugarbeet roots reduces rot due to *Botrytis cinerea*, *Penicillium claviforme*, and *Phoma betae*

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### Abstract

Although jasmonic acid (JA) and JA derivatives are known to activate plant defense mechanisms and provide protection against postharvest fungal diseases for several horticultural crops, JA's ability to protect sugarbeet (*Beta vulgaris* L.) roots against common causal organisms of storage rot is unknown. To determine the potential of JA to reduce rot due to three common sugarbeet storage pathogens, harvested roots were treated with JA concentrations of 0.01, 0.1, 1, 10, or 100  $\mu\text{M}$ , inoculated with *Botrytis cinerea*, *Penicillium claviforme*, or *Phoma betae*, and evaluated for the severity of rot symptoms after incubation at 20 °C and 90% relative humidity. JA concentrations of 0.01–100  $\mu\text{M}$  significantly reduced rot due to all three pathogens. All concentrations of JA provided statistically equivalent control against *B. cinerea* and *P. betae*, and reduced the amount of rotted tissue due to these pathogens by an average of 51 and 71%, respectively. Against *P. claviforme*, JA concentrations of 0.01–10  $\mu\text{M}$  were equally effective and reduced rot by an average of 44%, while an increase in JA concentration to 100  $\mu\text{M}$  reduced rot by 65%. Against all three pathogens, JA treatment did not affect the incidence of infection, but reduced rot by reducing the progression of disease symptoms in root storage tissue.