

**Title** Jasmonate-induced defense against *Tetranychus urticae* Koch. in greenhouse crops  
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### **Abstract**

Jasmonates are a lipid-derived class of plant hormones with significant roles in plant reproduction and defense against biotic and abiotic challenges. A novel protocol for simultaneous extraction of jasmonic acid and methyl jasmonate from plant tissue using solid-phase extraction is described using distinct internal standards for each compound. An increase in wound-induced jasmonic acid was detected in tomato using this protocol combined with gas chromatography-mass spectrometry. Jasmonate-induced defense in geranium (*Pelargonium × hortorum* Bailey), impatiens (*Impatiens walleriana* Hook.f.), pansy (*Viola × wittrockiana* Gams) and tomato (*Solanum lycopersicum* L.) against spider mites (*Tetranychus urticae* Koch) was tested using two methods: monitoring mite proliferation on methyl jasmonate-treated plants, and using a novel whole-plant assay to measure propensity of mites to leave treated plants. Exogenous methyl jasmonate reduced mite proliferation on pansy and impatiens and increased the rate of mites leaving treated impatiens, tomato, and marginally on geranium and pansy by inducing unknown plant-based resistance mechanism(s). Gibberellin synthesis inhibitors, commonly used in production of greenhouse crops, were also tested for effects on spider mite proliferation. A trend toward increased spider mite proliferation on daminozide-treated impatiens was found, and may be due to a reduction in proteinase inhibitor defenses in the plants. No effect on proliferation was found in pansy or in paclobutrazol-treated pansy or impatiens.