Suppression of Botrytis of Begonia by *Trichoderma hamatum* 382 in Peat and Compost-Amended Potting Mixes

Botrytis blight, caused by *Botrytis cinerea*, is an economically important disease of begonia and other greenhouse crops, where it can cause lesions on flowers, leaves, and stems during the entire cropping cycle. The disease is particularly severe under low light and high humidity greenhouse conditions. *B. cinerea* has unfortunately developed a resistance to many of the fungicides commonly used to combat it.

Bacterial and fungal bio-control agents have been proposed as topical sprays for control of botrytis blight. The problem with this is that the topical agent would most likely come into direct contact with any fungicides already applied to the foliage, which could decrease the impact of the beneficial microorganism. A solution to this is the use of rhizosphere microorganisms that induce systemic resistance (ISR) in plants and provide control of root as well as foliar diseases. Isolates of several *Trichoderma* spp. can reduce the severity of foliar diseases of plants when applied as seed or transplant treatments, presumably by inducing ISR in plants. *Trichoderma* spp. can be natural inhabitants of bark, peat, or composts used widely in potting mixes, but do not consistently colonize them.

The objective of this experiment was to determine whether: (i) inoculation of T382 (a Trichoderma isolate) into light sphagnum peat or compost-amended potting mix can reduce the severity of Botrytis blight of begonia; (ii) amendment of the light sphagnum peat potting mix with the compost affects efficacy of T382 in control of Botrytis blight; and (iii) the effect induced by T382 is systemic in nature. The experiment consisted of two groups, one using a light sphagnum peat mix and another using a composted cow manure-amended potting mix, each with their own control. Three experiments were performed to avoid interference from disease symptoms caused by *Pythium* inoculums that might inadvertently be introduced with the rooted cuttings.

Inoculation of the light peat mix with T382 significantly reduced the severity of Botrytis blight. In data combined from the three experiments, the degree of control provided by T382 did not differ significantly from that provided by weekly topical sprays with chlorothalonil. In addition, T382 significantly increased dry shoot weight and stability of flowering plants. Incorporation of composted cow manure into light peat mix also significantly decreased Botrytis blight severity, while increasing dry shoot weight and stability of flowering. Finally, T382 and chlorothalonil did not significantly affect blight severity, dry shoot weight, or stability of plants grown in the compost mix. It was concluded that the decrease in disease severity provided by inoculation of the peat mix with T382 most likely was due to systemic resistance induced in begonia against Botrytis blight. The suppressive effect of the compost mix was unusual because composts typically do not provide such effects unless inoculated with a bio-control agent capable of inducing systemic resistance.

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Figure 1.Effects of topical applications with chlorothalonil and of *Trichoderma hamatum* 382 on the severity of Botrytis of begonias produced in light peat or compost-amended potting mix. Plants represent one of the three replications in experiment 1.