



Influence of Benzyladenine Dips on Growth of Hosta Cultivars

James M. Garner and Allan M. Armitage
Department of Horticulture
The University of Georgia
Athens, GA 30602

Introduction

Hostas (*Hosta* spp. and hybrids) are members of the Lily family and are the most popular of all herbaceous perennials. Foliar application of benzyladenine (BA), a synthetic cytokinin, can promote lateral growth in hostas by inducing the outgrowth of rhizomic, vegetative buds when applied as a foliar spray to growing plants. Foliar BA application can induce the formation and outgrowth of offsets in a wide range of cultivars, but foliar application can only be performed after plants have leafed-out. BA-induced offsets become fully developed within 30 to 60 days after application, but growers may wish to induce offset development earlier in the growing season, to finish plants for early spring sales. Growers may benefit from BA application to bare-root hosta transplants prior to fall potting, to promote enhanced lateral growth upon subsequent emergence in the spring.

Nature of Work

The objective of this study was to determine the influence of BA application to dormant, bare-root hosta transplants as a dip treatment. On November 15, 1999, bare-root transplants of two hosta cultivars, 'Francee' and 'Francis Williams', were immersed in either 0, 125, 250, 500, or 1000 ppm BA for 60 seconds and planted the following day in one-gallon containers. 'Francee' is a cultivar that forms offsets readily in the absence of BA while 'Francis Williams' does not. On May 5, 2000, about 30 days after emergence, plant size and numbers of offsets present for each plant were recorded. Plant size was measured by a growth index (the mean of height, width, and width 90° to first width measurement).

Results and Discussion

BA-treated plants of both hosta cultivars formed more offsets than did untreated plants (Table 1). Treatment at 1000 ppm resulted in a 36% increase in offsets for 'Francee' and a 142% increase for 'Francis Williams'. Untreated plants of 'Francee' developed an average of 3.3 offsets, compared to 4.5 for those dipped in 1000 ppm BA, while untreated plants of 'Francis Williams' developed an average of 1.2 offsets, compared to 2.9 for those dipped in a 1000 ppm solution. Regardless of cultivar, treatment at rates as low as 125 ppm also promoted offset development. Plant size for both cultivars, as measured by the growth index, was reduced by BA treatment at rates higher than 125 ppm. The growth index for untreated plants of 'Francee' averaged 14.2, compared to 11.8 for those dipped in 1000 ppm BA, while untreated plants of 'Francis Williams' averaged 13.0, compared to 6.9 for those dipped in a 1000 ppm solution. At the higher rates, vegetative plant height alone for both cultivars was reduced in a similar manner.

Significance to Industry

Treatment of bare-root transplants with BA may be useful in promoting offset development in hosta cultivars. Dip treatments could provide an efficient method for promoting enhanced lateral growth upon emergence in spring. Treatment in this manner could allow growers to market larger plants during periods of peak market demand, but dip applications of BA were not as effective in promoting offset development as foliar application to growing plants. Dip applications may also have growth retarding or phytotoxic effects when applied to bare-root hosta transplants at high rates. Application by immersion in BA solutions higher than 125 ppm may reduce overall growth. Further studies may be warranted to determine optimal dip application rates and exposure times, and additional data should be collected at the end of the growing season to determine the longer-term growth retardant effects of BA dip treatment.

Table 1. Vegetative plant height, growth index (GI)^z, and offset counts for *Hosta* >Francee= and >Francis Williams= immersed for 60 seconds in 0, 125, 250, 500, or 1000 ppm benzyladenine (BA).

BA Rate (ppm)	Cultivar						
	>Francee=				>Francis Williams=		
	Height (in.)	GI	Offsets		Height (in.)	GI	Offsets
0	8.3	14.2	3.3		9.3	13.0	1.2
125	8.0	13.9	4.1		9.4	14.0	2.8
250	8.0	12.4	4.1		7.8	12.8	2.9
500	7.5	11.9	4.6		7.3	12.2	3.2
1000	7.2	11.8	4.5		6.9	11.3	2.9

^z Growth index = the mean of height, width, and width 90° to first width measurement.