

## Initiating Flower Buds of *Hydrangea macrophylla* Liners®

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### INTRODUCTION

For many years *Hydrangea macrophylla* has been forced into flower in greenhouses for sale in April or May as houseplants. In nursery production, it is common to overwinter larger containers and allow them to flower naturally, often with a head start in covered houses. In greenhouse production it is common for growers to start with pre-cooled plants produced by a supplier which they can force into flower in 12–14 weeks. In nursery production it is common for growers to purchase or propagate liners to transplant and grow for one or two seasons before finishing. *Hydrangea macrophylla* flower induction is best achieved by cool temperatures (<18 °C) under shorter daylengths, then followed by a dormancy period. In greenhouse production coolers are used to initiate and develop flower buds. In nurseries, flower initiation typically occurs naturally. Because flower buds are initiated before dormancy it is critical not to prune or pinch plants after this process has begun or flower buds will be removed. At Spring Meadow Nursery, liners are traditionally trimmed two or more times to promote branching and manage liner size and shape. Most liners are trimmed well into October, which is far too late for hydrangeas to develop new flower buds for the following season. The goal of this trial was to initiate flower buds in the liner stage naturally, without the use of coolers, while managing liner height without pruning or shearing.

### MATERIALS AND METHODS

*Hydrangea macrophylla* cultivars used in this experiment were of the Cityline® series. Cultivars used were Cityline Berlin, Cityline Paris, Cityline Vienna, and Cityline Venice. In our 2008 trials, 4<sup>1</sup>/<sub>2</sub>-inch (1-qt) liners were produced in the May and grown in open-roof greenhouses. Liners were pruned as needed, but no pruning took place after Week 30. Liners were treated with plant growth regulators (PGRs) Week 32 (B-Nine at 9000 ppm) and Week 35 (Bonzi at 50 ppm). The liners were overwintered in a 1 °C greenhouse. Florel at 2500 ppm was sprayed Week 48 to promote defoliation. Defoliation reduces *Botrytis* during cold period and allows buds to fully perceive cold. Leaves were removed after defoliation. After 9 weeks in a cool greenhouse, plants were transplanted Week 5 into 2-gal containers and forced at 20 °C under natural days. Most plants began flowering Week 16, and were in full flower by Week 19.

### RESULTS AND DISCUSSION

Based on preliminary trials in 2007, and more refined trials in 2008, it was determined that these cultivars in our environment could be pruned as late as Week 31 and still have sufficient time to properly induce flowering without daylength or temperature manipulation before dormancy. This date is later than recommended in traditional forcing schedules. It was also noted that the different cultivars responded differently to plant growth regulators. Cityline Berlin was the least af-

ected, followed by Cityline Paris, then Cityline Venice, and Cityline Vienna being the most affected. This correlates to the difference in plant vigor with Cityline Berlin being the most vigorous and Cityline Vienna being the least. Without the use of coolers, with tight plant spacing and a desire for compactness, height control was the most difficult aspect of initiating flower buds in liners. While the trial in 2008 was successful from a flowering perspective, plant size and uniformity was not as great as desired. For 2009 it was decided to start with uniform cuttings, and uniform hand pinching.

### **CURRENT AND FUTURE EXPERIMENTS**

In 2009, plants were propagated in 50-cell plug trays Week 23, pinched to one node Week 28 and transplanted to 4 $\frac{1}{2}$ -inch liner pots Week 29. In order to allow maximum time for flower induction and bud development, an earlier pinch date was used, and more growth regulators applied to maintain height. The PGRs were applied Week 30, Week 31, and Week 33. *Hydrangea macrophylla* taxa are large and vigorous plants and plant spacing may be an issue initiating flowers buds using this method. Without late summer shearing and pruning, there is a great deal of competition for light between plants tightly spaced within liner trays. This can cause some plants to be shaded resulting in non-uniform lateral branching. This will be evaluated late 2009 and early 2010.