

USING LATE FALL GROWTH REGULATOR CONTAINER DRENCHES TO CONTROL SPRING GROWTH OF *Coreopsis lanceolata* 'Sunray'

By Gary Bachman and Edgar Smith, Tennessee Technological University, Cookeville, TN

The number of herbaceous perennials grown in containers is increasing along with their popularity with consumers. A production problem encountered by growers is controlling the growth of these ornamental landscape plants. Typically plant growth regulating compounds are applied in the spring prior to or even during the shipping season. At this time of the year, nursery personnel are occupied with loading/shipping spring sales. There would be advantages if these growth-regulating compounds could be applied at an alternative time of the year when time constraints would be less. Previous work by the author has shown that container drenches of Bonzi (paclobutrazol) or Sumagic (uniconazole) could be effectively applied in late winter when the herbaceous perennials are still dormant. A question that needs to be answered is can plant growth regulator container drenches be applied prior to dormancy. Also proper dosing is important as the triazole plant growth regulators can adversely affect flower initiation when concentrations are excessive. The objective of our research was to determine the effectiveness of plant growth regulator container drenches in late fall as *Coreopsis lanceolata* 'Sunray' is entering dormancy.

Uniform plugs of the herbaceous perennial *Coreopsis lanceolata* 'Sunray' were selected and transplanted into 3.8L (full gallon) containers in 100% pine bark fines. Fertilization and irrigation were applied using best management practices. All plants were uniformly pruned on 1 October 98. Container drenches of Bonzi (0, 2.0, 4.0, 8.0 mg/container) and Sumagic (0, 0.5, 1.0, 2.0 mg/container) were applied on 1 Nov 98 using a container drench volume of 500 ml. All containers were placed in cold frames on 1 Dec 98 for winter protection. Upon removal from the coldframes on 10 Apr 99 all plants were topdressed with 16g 14-7-7 granular fertilizer. On 15 Jun 99 measurements were recorded that included growth index using the $(W1+W2+H)/3$ method, height, and flower number.

The effectiveness of the two growth regulators was significantly different. Increasing drench rates of Sumagic resulted in greater control of plant height (Table 1). Width and growth index has similar results. All of the Sumagic drench rates provided greater control of plant width and growth index, however there was no difference between the drench treatments. All Sumagic drench rates reduced flower number when compared to the control treatment. Sumagic was effective at all container drench rates examined in controlling the growth of *Coreopsis lanceolata* 'Sunray' though all rates had the effect of decreasing flower production.

Bonzi at the container drench rates evaluated provided no significant control of any of the parameters examined (Table 1). Possible explanations are the rates were not sufficient or the Bonzi was bound to the pine fine media. A better explanation is based on placing the plants in cold frames for winter protection. The temperatures in the coldframes were moderated to such a degree that the plants did not fully enter dormancy and outgrew the effectiveness of the growth regulator. The results do not preclude late fall Bonzi use to control spring growth, but indicate more study is required of the effects of dormancy and growth regulator efficacy.

To maintain the marketability of herbaceous perennials during the spring shipping and sales season, chemical plant growth regulators need to be utilized. Having the management tool of applying these plant growth regulators during a period when the pressures on the labor force is reduced would be advantageous for the nursery grower. Late fall container drenches of herbaceous perennials could be a viable management strategy to use. Much work needs to be accomplished to evaluate the effectiveness of this strategy due to the many herbaceous perennials being grown today.

Table 1. Spring growth response of *Coreopsis lanceolata* 'Sunray' to late fall container drenches of Sumagic or Bonzi.

Sumagic (mg/cont)	Height (cm)	Width (cm) (W1+W2)/2	Growth Index	Flower Number
Control	38.25 a ^c	37.50 a	37.87 a	65.25 a
0.5 mg	33.50 ab	25.00 b	29.25 b	42.75 b
1.0 mg	27.75 bc	24.25 b	26.00 b	41.50 b
2.0 mg	24.25 c	28.00 b	26.12 b	41.00 b

Bonzi (mg/cont)	Height (cm)	Width (cm) (W1+W2)/2	Growth Index	Flower Number
Control	37.25 a	33.75 a	35.50 a	55.25 a
2.0 mg	38.67 a	34.33 a	36.50 a	78.00 a
4.0 mg	36.33 a	34.50 a	35.42 a	54.67
8.0 mg	36.33 a	33.50 a	34.91 a	74.33 a

^cMean separation within columns by least significant difference (LSD), $P=0.05$.