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GARDEN CHRYSANTHEMUM CULTURE THE EASY WAY

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For the past several years we have been witnessing the experiences and the plants garden chrysanthemum growers have had. Some growers were very successful and scarcely need an article on garden mum culture. Some growers encountered difficulties, often because they didn't do something when it needed doing, or they did it when it shouldn't have been done. Fortunately garden mums are somewhat "forgiving" plants and success is achieved though failure is justified.

During the winter of 1995 we decided to work with garden chrysanthemums in the spring, summer and fall. We wanted to compare two fertilizer rates and manual pinching versus the use of Florel®. We had heard some of the presentations Peter Konjoian, Andovers, Massachusetts, had made on the use of Florel and we had seen many plants treated with the chemical. Florel seemed to overcome a real hurdle encountered by garden mum growers...

the need for a second manual pinch... but most growers we talked to seemed unaware of its benefits, and seemed cautious about anything that involves ethylene. Such misgivings are understandable, as the consequences of ethylene pollution in a greenhouse can be devastating (Figure 1). The controlled release of ethylene



Figure 1. Ethylene injury on a 'Shoesmith' cultivar.



Figure 2. Florel-treated garden mum. Photo taken at C. Merkel and Son, Mentor, Ohio.

from a growth regulator such as Florel (Pistill) can be very helpful, however (Figure 2).

We wanted to make certain that we would use cultivars which were popular so we asked for advice from Ed Higgins, the chrysanthemum project manager at Yoder Brothers, Inc., Barberton, Ohio. We not only asked for advice, we asked for rooted cuttings, and Yoders sent us the following: 'Bravo', 'Debonair', 'Jennifer', 'Jessica', 'Linda', 'Lynn', 'Megan', 'Raquel', 'Tolima' and 'Yellow Triumph'. We planted these cuttings on June 8, one per 8 inch container, in Metro Mix 360. The pots were placed on 18" centers under a saran shade at the Horticultural Field Laboratory. Watering was achieved with a tube connected to a ring in each pot.

We had 100 plants of each cultivar, and 50 received 300 ppm N once a week and the other 50 received 500 ppm N. The fertilizer used was 20-10-20. Osmocote® (14-14-14) was applied as a top dressing two weeks after planting, at a rate of 2 teaspoonfuls per pot. All of the plants in each treatment were given the first pinch on June 26, which was 18 days after planting when root systems were well established. On July 14 half of the plants in each

treatment were manually pinched again, while the other half were sprayed with Florel at 500 ppm.

No insecticides or fungicides were used and the major pest problems were rabbits. They seemed to have a preference for 'Debonair', but that might have been because of the location of that cultivar, which was at one end of the plot. A chicken wire fence corrected that situation. No growth regulators were used other than Florel were used.

Results and Discussion

Plants treated with Florel were delayed in the appearance of flower buds and early development compared to the manually pinched plants (Figure 3), but the differences were not noticeable at the conclusion of the experiment. Plant size was similar for all plants of a given cultivar, and there was very little difference among cultivars. The plants were 16 to 19 inches tall, measuring from the ground to the top of the plant. Flowers were not counted but there seemed to be little difference among treatments (Figure 4). We modestly rated all of the plants as very good, and the plant Ingram McCall is holding (Figure 5), was typical of all of the plants in the experiment.



Figure 3. Florel (Left) versus manual pinch (Right). Plants were feed with 300 ppm N. Slide take 25 September 1995..



Figure 4. Although Florel delayed the onset of flower buds and early development, there was no measurable difference in date of flowering between the Florel and manual treatments.

Several applications of Florel have been suggested, to keep the plants vegetative when the grower wants them in that state, and to produce a multitude of breaks. Our plants would have suffered a loss of quality if we had more shoots at the 18" spacing. One application seemed to be very adequate. It also has been suggested that more than cutting be planted in each container, to enable a grower to plant later and still have plants of the desired size and flower number. An early June planting, a mid-June final pinch, and natural daylengths resulted in a flowering period of late September and early October. The Men's Garden Club of Wake County has a large garden mum project for the N.C. State Fair Flower Show, which is held in mid-October.

They planted their cuttings the same week we planted ours, they put three cuttings per pot, and they had to use B-Nine for height control on the same cultivars we grew. Locations of the two garden mum sites are about one mile apart.

There was no advantage in using 500 ppm N, when plants given 300 ppm were of a comparable size and exhibited no deficiency symptoms. There was a definite labor-saving advantage in using Florel.

We wish to acknowledge Yoder Brothers, Inc. for the mum cuttings, Scotts for the donation of substrate and fertilizer, and Dr. Mike Benson, Department of Plant Pathology, NCSU, for letting us use his saran-covered space and his irrigation system at the Horticultural Field Laboratory.



Figure 5. Ingram McCall with a 'Bravo' chrysanthemum.

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GROWTH REGULATORS FOR FLORICULTURAL CROPS

Douglas A. Bailey, Department of Horticultural Science, NCSU

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Ageratum	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	Plug culture and flat culture differ in recommended rates. Apply ALL foliar sprays of plant growth regulators using 0.5 gallon per 100 square feet of bench area. Growers should refer to Horticulture Information Leaflet #528, Height Control of Greenhouse Crops, for application techniques and timing for growth regulators on floricultural crops. Contact floricultural specialists at N. C. State University for further application information.
		B-Nine	2,500 to 5,000 ppm spray (0.39 to 0.79 oz/gal)	
		Bonzi	5 to 45 ppm spray (0.16 to 1.44 fl oz/gal)	
		Sumagic	20 to 30 ppm spray (5.12 to 7.68 fl oz/gal)	
Alternanthera (Joseph's-Coat)	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Amaryllis	To control plant height	Bonzi	23.66 mg a.i. drench for a 6 in. pot (6.4 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
Aster	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		B-Nine	5,000 ppm spray (0.79 oz/gal)	
Azalea	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	Contact floricultural specialists at N. C. State University.
	To promote flower initiation	B-Nine	1,500 to 2,500 ppm spray (0.24 to 0.39 oz/gal)	Apply solution when new growth from final pinch is 1 to 2 inches long.
		Cycocel	1,800 to 2,800 ppm spray (2 to 3 fl oz/gal)	Apply when new growth is approximately 1 inch long.
	To promote lateral shoot growth on vegetative plants	Off-Shoot-O	Use a 3 to 5% solution (8.6 to 14 fl oz/gal) solution in greenhouses; use 5 to 7% (14 to 20 fl oz/gal) outdoors. Apply as a foliar spray.	Be certain chemical covers shoot tip. Ineffective if microscopic flower buds are present.
	To increase lateral branching	Atrimmec	3,125 to 6,250 ppm spray (2 to 4 fl oz/gal)	Contact floricultural specialists at N. C. State University.
		Florel	2,471 to 4,943 ppm spray (8 to 16 fl oz/gal)	
To control plant height, reduce bypass shoot elongation, and promote flower bud initiation	Bonzi	100 to 200 ppm spray (3.2 to 6.4 fl oz/gal)	To control plant height and promote flower bud initiation, apply final shaping, when new growth is 1.5 to 2 inches long. To reduce bypass shoot development, apply after bud set, when bypass shoots are barely visible.	
		0.59 to 1.77 mg a.i. drench for a 6 in pot (0.16 to 0.48 fl oz/gal of drench solution; apply 4 fl oz/6 in pot)	Drench application volumes vary with pot size. Contact floricultural specialists at N. C. State University.	
To control plant height	Sumagic	10 to 15 ppm spray (2.56 to 3.84 fl oz/gal)	Apply at 1.5 quarts per 100 square feet of bench area. Contact floricultural specialists at N. C. State University for further application information.	
Balsam	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Bedding Plants (Not specifically listed in this table)	To control plant height	Bonzi	30 ppm spray (0.96 fl oz/gal)	Users should conduct trials on a small number of plants, adjusting the rates as needed for desired final plant height and duration of height control.
			0.118 mg a.i. drench for a 6 in. pot (0.032 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench applications are recommended only for bedding plants in 6 inch or larger containers.
Bedding Plant Plugs (Not specifically listed in this table)	To control plant height	Bonzi	5 ppm spray (0.16 fl oz/gal)	Users should conduct trials on a small number of plants, adjusting the rate as needed for desired final plant height and duration of height control. Plants should develop 1 to 2 true leaves prior to first application.
Begonia	To control plant height	B-Nine	5,000 ppm spray (0.79 oz/gal)	See Ageratum.
Begonia, Elatior	To increase lateral branching	Atrimmec	781 to 1,562 ppm spray (0.5 to 1.0 fl oz/gal)	
Bleeding Heart	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Bluebell (<i>Campanula rotundifolia</i>)	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Bougainvillea	To increase lateral branching	Atrimmec	1,562 ppm spray (1 fl oz/gal)	
Bromeliads	To promote flower initiation	Florel	2,471 ppm spray (8 fl oz/gal)	Contact floricultural specialists at N. C. State University.
Bulb Crops (Not specifically listed in this table)	To control plant height	Bonzi	100 ppm spray (3.2 fl oz/gal)	Users should conduct trials on a small number of plants, adjusting the rate as needed for desired final plant height and length of height control.
			1.183 mg a.i. drench for a 6 in. pot (0.32 fl oz/gal of drench solution; apply 4 fl oz per 6 in. pot)	Drench application volumes vary with pot size.
			20 ppm bulb soak (0.64 fl oz/gal)	Soak for 15 minutes. Users should conduct trials on a small number of bulbs, adjusting the rate and soaking period (up to 1 hour) as needed for desired final plant height.
Caladium	To control plant height	Bonzi	100 to 200 ppm spray (3.2 to 6.4 fl oz/gal)	First spray applications should be made when plants are 2 to 4 inches tall.
			1.183 to 2.366 mg a.i. drench for a 6 in. pot (0.32 to 0.64 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	First drench applications should be made when plants are 1 to 2 inches tall. Drench application volumes vary with pot size.
Calla Lily	To control plant height	Bonzi	1.183 to 3.549 mg a.i. drench for a 6 in. pot (0.32 to 0.96 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	See Caladium.
			20 ppm rhizome/tuber soak (0.64 fl oz/gal)	Soak the rhizomes/tubers for 15 minutes prior to planting.
Celosia	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		B-Nine	2,500 ppm spray (0.39 oz/gal)	
		Bonzi	4 to 50 ppm spray (0.13 to 1.60 fl oz/gal)	
		Sumagic	10 to 20 ppm spray (2.56 to 5.12 fl oz/gal)	
Chrysanthemums, Cut	To reduce "neck" stretching	B-Nine	2,500 ppm spray (0.39 oz/gal)	Spray upper foliage 5 weeks after start of short-day treatment.

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Chrysanthemums, Potted	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	Contact floricultural specialists at N. C. State University.
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
		B-Nine	1,000 ppm preplant foliar dip (0.16 oz/gal)	Contact floricultural specialists at N. C. State University.
			1,250 to 5,000 ppm spray (0.20 to 0.79 oz/gal)	Spray when new growth from pinch is 1 to 2 inches long. Some varieties may require another application 3 weeks later.
		Bonzi	50 to 200 ppm spray (1.6 to 6.4 fl oz/gal)	Contact floricultural specialists at N. C. State University.
			0.118 to 0.473 mg a.i. drench for a 6 in. pot (0.032 to 0.128 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
Sumagic	2.5 to 10 ppm spray (0.64 to 2.56 fl oz/gal)	Contact floricultural specialists at N. C. State University.		
Chrysanthemums, Garden	To increase lateral branching	Florel	500 ppm spray (1.619 fl oz/gal)	Florel applications will provide some growth retardant effects. A delay in flowering will also occur with the use of Florel. Read the label for restrictions on timing of applications.
Clematis	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Cleome	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
Clerodendrum	To increase lateral branching	Atrimmec	1,042 to 2,083 ppm spray (0.67 to 1.33 fl oz/gal)	
Coleus	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		Bonzi	5 to 45 ppm spray (0.16 to 1.44 fl oz/gal)	
		Sumagic	10 to 20 ppm spray (2.56 to 5.12 fl oz/gal)	
Columbine	To control plant height	A-Rest	66 to 132 ppm spray (32 to 64 fl oz/gal)	
Cornflower	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
Cosmos	To control plant height	B-Nine	5,000 ppm spray (0.79 oz/gal)	See Ageratum.
Crossandra	To control plant height	B-Nine	2,500 ppm spray (0.39 oz/gal)	
Daffodil	To control plant height	Bonzi	2.366 to 4.732 mg a.i. drench for a 6 in. pot (0.64 to 1.28 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	See Caladium.
		Florel	1,000 to 2,000 ppm spray (3.24 to 6.47 fl oz/gal)	Contact floricultural specialists at N. C. State University.

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Dahlia	To control plant height	A-Rest	0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
		B-Nine	5,000 ppm spray (0.79 oz/gal)	See Ageratum.
		Bonzi	5 to 45 ppm spray (0.16 to 1.44 fl oz/gal)	
		Sumagic	10 to 20 ppm spray (2.56 to 5.12 fl oz/gal)	
Delphinium	To control plant height	A-Rest	33 to 132 ppm spray (16 to 64 fl oz/gal)	See Ageratum.
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
Dianthus	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		Bonzi	5 to 60 ppm spray (0.16 to 1.92 fl oz/gal)	
Dracaena	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Dusty Miller	To control plant height	B-Nine	5,000 ppm spray (0.79 oz/gal)	See Ageratum.
Easter Lily	To control plant height	A-Rest	33 to 66 ppm spray (16 to 32 fl oz/gal)	Contact floricultural specialists at N. C. State University.
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
		Sumagic	10 to 25 ppm spray (2.56 to 6.4 fl oz/gal)	Contact floricultural specialists at N. C. State University.
			0.03 to 0.06 mg a.i. drench for a 6 in. pot (0.065 to 0.13 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
Exacum	To control plant height	B-Nine	2,500 ppm spray (0.39 oz/gal)	
Fatshedera	To control plant height	A-Rest	66 to 132 ppm spray (32 to 64 fl oz/gal)	
Flowering/ Foliage Plants Herbaceous Species (Not specifically listed in this table)	To control plant height	Bonzi	30 ppm spray (0.96 fl oz/gal)	Users should conduct trials on a small number of plants, adjusting the rate as needed for desired final plant height and length of height control.
			0.118 mg a.i. drench for a 6 in. pot (0.032 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench application volumes vary with pot size.
Flowering/ Foliage Plants, Woody Species (Not specifically listed in this table)	To control plant height	Bonzi	50 ppm spray (1.6 fl oz/gal)	Users should conduct trials on a small number of plants, adjusting the rate as needed for desired final plant height and length of height control.
			0.237 mg a.i. drench for a 6 in. pot (0.064 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench application volumes vary with pot size.
Freesia	To control plant height	Bonzi	100 to 300 ppm corm soak (3.2 to 9.6 fl oz/gal)	Soak corms in the solution for 1 hour before planting.

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Fuchsia	To increase lateral branching	Atrimmec	781 to 2,343 ppm spray (0.5 to 1.5 fl oz/gal)	
		Florel	500 ppm spray (1.619 fl oz/gal)	Florel applications will provide some growth retardant effects. A delay in flowering will also occur with the use of Florel. Read the label for restrictions on timing of applications.
Gardenia	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
		B-Nine	5,000 ppm spray (0.79 oz/gal)	
	To increase lateral branching	Atrimmec	2,343 to 4,687 ppm spray (1.5 to 3.0 fl oz/gal)	
Geraniums	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
	To control plant height	Bonzi	10 to 30 ppm spray (0.32 to 0.96 fl oz/gal)	Apply to zonal geraniums when new growth is 1.5 to 2 inches long. Apply to seed geraniums approximately 2 to 4 weeks after transplanting.
		Cycocel	750 to 2,500 ppm spray (0.8 to 2.7 fl oz/gal)	Labeled for seed geraniums only. See Ageratum.
		Sumagic	3 to 6 ppm spray (0.77 to 1.54 fl oz/gal) for cutting geraniums and 2 to 4 ppm spray (0.51 to 1.02 fl oz/gal) for seed geraniums	See Ageratum.
	To increase lateral branching	Atrimmec	1,562 ppm spray (1 fl oz/gal)	Labeled for ivy geraniums only.
Florel		500 to 1,000 ppm spray (1.619 to 3.24 fl oz/gal)	Labeled for zonal and ivy geraniums. Use the lower concentration for ivy geraniums. Florel will also provide some growth retardant effect. A delay in flowering will also occur with the use of Florel. Read the label for restrictions on timing of applications.	
Gerbera Daisy	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Grape Ivy	To increase lateral branching	Atrimmec	781 to 1,562 ppm spray (0.5 to 1 fl oz/gal)	
Hibiscus	To control plant height	Bonzi	30 to 150 ppm spray (0.96 to 4.8 fl oz/gal)	Application should be made when laterals are 1 to 4 inches long. Single applications control lateral growth for 3 to 6 months.
		Cycocel	460 ppm spray (0.5 fl oz/gal)	
Holly	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
Hyacinth	To reduce stem topple	Florel	1,000 ppm spray (3.24 fl oz/gal)	Contact floricultural specialists at N. C. State University.
Hybrid Lily	To control plant height	Bonzi	250 to 500 ppm spray (8.0 to 16.0 fl oz/gal)	See Caladium.
			1.183 to 2.366 mg a.i. drench for a 6 in. pot (0.32 to 0.64 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	
			20 to 30 ppm bulb soak (0.64 to 0.96 fl oz/gal)	Soak bulbs in the solution for 15 minutes prior to planting.
Hydrangea	To control plant height	B-Nine	2,500 to 7,500 ppm spray (0.39 to 1.18 oz/gal)	Contact floricultural specialists at N. C. State University.

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Iberis	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	
Impatiens	To control plant height	Bonzi	5 to 45 ppm spray (1.44 to 2.02 fl oz/gal)	See Ageratum.
		Sumagic	5 to 10 ppm spray (1.28 to 2.56 fl oz/gal)	
Kalanchoe	To increase lateral branching	Atrimmec	1,042 to 2,343 ppm spray (0.67 to 1.5 fl oz/gal)	
Lantana	To increase lateral branching	Atrimmec	781 to 1,562 ppm spray (0.5 to 1 fl oz/gal)	Florel applications will provide some growth retardant effects. A delay in flowering will also occur with the use of Florel. Read the label for restrictions on timing of applications.
		Florel	500 ppm spray (1.619 fl oz/gal)	
Liatris	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	
Lipstick Vine	To increase lateral branching	Atrimmec	521 to 1,042 ppm spray (0.33 to 0.67 fl oz/gal)	
Marigold	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		B-Nine	2,500 to 5,000 ppm spray (0.39 to 0.79 oz/gal)	
		Bonzi	10 to 60 ppm spray (0.32 to 1.92 fl oz/gal)	
		Sumagic	10 to 20 ppm spray (2.56 to 5.12 fl oz/gal)	
Monstera	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Montbretia	To control plant height	Bonzi	20 to 30 ppm corm soak (0.64 to 0.96 fl oz/gal)	Soak corms in the solution for 15 minutes prior to planting.
Nephtytis, Green & Green Gold	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Pansy	To control plant height	Bonzi	1 to 15 ppm spray (0.03 to 0.48 fl oz/gal)	See Ageratum.
		Sumagic	1 to 6 ppm spray (0.26 to 1.54 fl oz/gal)	
Petunia	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		B-Nine	2,500 to 5,000 ppm spray (0.39 to 0.79 oz/gal)	
		Bonzi	5 to 60 ppm spray (0.16 to 1.92 fl oz/gal)	
		Sumagic	25 to 50 ppm spray (6.4 to 12.79 fl oz/gal)	

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Philodendron	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Phlox	To control plant height	B-Nine	5,000 ppm spray (0.79 oz/gal)	
Pilea	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Poinsettia	To control plant height	A-Rest	0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Contact floricultural specialists at N. C. State University.
		B-Nine	2,000 to 3,000 ppm spray (0.31 to 0.47 oz/gal)	
		B-Nine + Cycocel	2,000 to 2,500 ppm B-Nine (0.31 to 0.39 oz/gal) + 1,500 ppm Cycocel (1.6 fl oz/gal) spray	Contact floricultural specialists at N. C. State University.
		Bonzi	10 to 30 ppm spray (0.32 to 0.96 fl oz/gal)	Contact floricultural specialists at N. C. State University.
			0.237 to 0.473 mg a.i. drench for a 6 in. pot (0.064 to 0.128 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	
		Cycocel	1,000 to 3,000 ppm spray (1.1 to 3.3 fl oz/gal)	Labeled for red poinsettias only.
523 mg a.i. drench for a 6 in. pot (3.2 fl oz/gal of drench solution; apply 6 fl oz/6 in. pot)				
Sumagic	2.5 to 10 ppm spray (0.64 to 2.56 fl oz/gal)	Contact floricultural specialists at N. C. State University.		
Pothos	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Purple Passion (<i>Gynura aurantiaca</i>)	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Salvia	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		B-Nine	5,000 ppm spray (0.79 oz/gal)	
		Bonzi	5 to 60 ppm spray (0.16 to 1.92 fl oz/gal)	
		Sumagic	5 to 10 ppm spray (1.28 to 2.56 fl oz/gal)	
Schefflera	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
			0.25 to 0.5 mg a.i. drench for a 6 in. pot (1 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	
	To increase lateral branching	Atrimmec	3,125 ppm spray (2 fl oz/gal)	Labeled for <i>Schefflera arboricola</i> only.
Shrimp Plant	To increase lateral branching	Atrimmec	781 to 1,562 ppm spray (0.5 to 1 fl oz/gal)	
Snapdragon	To control plant height	Bonzi	5 to 90 ppm spray (0.16 to 2.88 fl oz/gal)	See Ageratum.
		Sumagic	25 to 50 ppm spray (6.4 to 12.79 fl oz/gal)	

Crop	Purpose	Chemical	Rate	Precautions and Remarks
Tulip	To control plant height	A-Rest	0.125 to 0.5 mg a.i. drench for a 6 in. pot (0.5 to 2 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench rates and application volumes vary with pot size. Contact floricultural specialists at N. C. State University.
		Bonzi	0.591 to 4.732 mg a.i. drench for a 6 in. pot (0.16 to 1.28 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	Drench application volumes vary with pot size.
			2 to 5 ppm bulb soak (0.064 to 0.16 fl oz/gal)	Soak bulbs for 1 hour prior to planting.
Verbena	To control plant height	B-Nine	5,000 ppm spray (0.79 oz/gal)	See Ageratum.
	To increase lateral branching	Atrimmec	521 to 1,042 ppm spray (0.33 to 0.67 fl oz/gal)	
		Florel	500 ppm spray (1.619 fl oz/gal)	Florel applications will provide some growth retardant effects. A delay in flowering will also occur with the use of Florel. Read the label for restrictions on timing of applications.
Vinca (<i>Catharanthus roseus</i>)	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.
		B-Nine	2,500 ppm spray (0.39 oz/gal)	
Sumagic	1 to 3 ppm spray (0.26 to 0.77 fl oz/gal)			
Vinca Vine (<i>Vinca spp.</i>)	To increase lateral branching	Florel	500 ppm spray (1.619 fl oz/gal)	Florel applications will provide some growth retardant effects. A delay in flowering will also occur with the use of Florel. Read the label for restrictions on timing of applications.
Viola	To control plant height	Sumagic	1 to 5 ppm spray (0.26 to 1.28 fl oz/gal)	See Ageratum.
Wandering Jew	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	
Woody Landscape Plants (Not Specifically listed in this table)	To control plant height	Bonzi	100 ppm spray (3.2 fl oz/gal)	See Bedding Plants.
			0.473 mg a.i. drench for a 6 in. pot (0.128 fl oz/gal of drench solution; apply 4 fl oz/6 in. pot)	
Zinnia	To control plant height	A-Rest	26 to 132 ppm spray (12.6 to 64 fl oz/gal)	See Ageratum.

Plan Now to Attend:
NCCFGA General Membership Meeting
2:00 PM Friday, 12 January 1996
at the
N.C. Green & Growin' Show and Floral Exposition
Adams Mark Hotel
Winston-Salem, N.C.

NCCFGA NEWS

Rob Lassiter, President

This has been a busy year for Your Association. We've been involved in the Green and Growin' Show, co-sponsored the Bedding Plant Field Day, initiated the Roy A. Larson Scholarship Fund, and co-sponsored the NCSU Poinsettia Open House. If you didn't take advantage of these opportunities, please mark you calendar now for 1996.

Speaking of 1996, we will be holding our NCCFGA Annual Meeting and voting on officers for the 1996 term at 2:00 PM on Friday, 12 January 1996 during the floriculture session at the Green and Growin' Show in Winston-Salem. This is one of your opportunities to have input into NCCFGA, and we hope you will participate. See the enclosed insert for more details about the Green and Growin' Show.

You may have noticed from the first paragraph that the Roy A. Larson Scholarship Fund is now underway. Enclosed with this issue of the Bulletin is a flyer outlining how interest from this fund will be used to reward students interested in a career in floriculture. Please take time to read this flyer; and to send in your contributions. Dr. Larson has given so much to us in North Carolina and to floriculture everywhere. Now is our chance to show how much we appreciate his contributions by supporting this scholarship and thus supporting the future of our industry.

We are also holding an Appreciation Banquet for Roy on Saturday night, 17 February. Proceedings from this event will go into the Scholarship Fund. This is another opportunity to personally thank Dr. Larson for all he has done during his years at N.C. State. Also, you could

come away with one of Roy's famous neckties (actually, they are Darlyne's creations -- all Roy does is wear them). We will be auctioning off some of Roy's ties along with other momentos during the Appreciation Banquet to further support the Scholarship Fund. See the announcement about the dinner on the following page for more details. Now, on to another subject near and dear to my heart:

Poinsettias -- Next year I'm going to do a better job. I think I know what I did wrong. The more information I have on this plant the more I find out that I need. After all these years of being around this *Euphorbia*, I find no comfort in my ability to grow it. I am lucky to be in North Carolina where many of the best poinsettia minds in the country reside. Alas, being told how to grow poinsettias is like being told how to shoot pool. You're going to need to practice. Practicing with poinsettias is expensive and emotionally exhausting. Twenty-five year veterans sound like beginners when years are less than stellar. Varieties show no desire to respond the same one year to the next. The worst crop a grower ever had is followed by the best crop he ever had. One customer's unfavorable remarks can break the best of crops. Don't worry -- your next stop will tell you how these are the prettiest poinsettias they have ever seen. This is a tough business. Maybe the Fremont Group will save us.

Merry Christmas and Happy New Year!



YOU ARE INVITED

TO ATTEND THE ROY A. LARSON APPRECIATION AND SCHOLARSHIP BANQUET TO BE HELD ON SATURDAY, 17 FEBRUARY 1996 AT THE BROWNESTONE HOTEL IN RALEIGH, NORTH CAROLINA

A hors d'oeuvres and cash bar reception will begin at 6:00 PM followed by dinner at 7:00 PM

The evening's entertainment will include a silent auction of some of Roy Larson's ties and words of appreciation from North Carolina growers

The banquet is \$50 per person, with proceeds going to the Roy A. Larson Scholarship Foundation. Please mail in the registration form below. If you have any questions, contact Bonnie Holloman at 919-779-4618

The Brownstone is offering a special room rate of \$57 per night. Make Your Hotel Reservations by Calling 919-828-0811.

Roy A. Larson Appreciation and Scholarship Banquet

Names of Attenders: _____

Address: _____

Phone: _____ Total Enclosed: \$ _____

Please mail to:
Bonnie Holloman
NCCFGA
8600 Crowder Road
Raleigh, NC 27603

Make checks (\$50 per person) payable to: NCCFGA

Garden Center Managers Program

Names of Attenders: _____

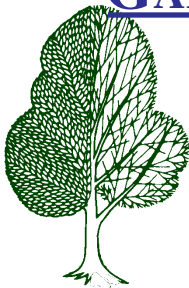
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Phone: _____ Total Enclosed: \$ _____

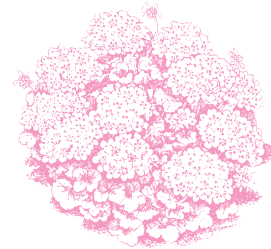
Please mail to:
Ted Bilderback
Dept. of Hort. Science
Box 7609 NCSU
Raleigh, NC 27695

Make Checks (\$55 per person) Payable to: North Carolina Agricultural Foundation

GARDEN CENTER MANAGERS PROGRAM



9:00 AM TO 4:00 PM
THURSDAY, 22 FEBRUARY 1996
McKIMMON CENTER
RALEIGH, N.C.



This intensive program is designed to assist garden center owners and managers in personnel management, marketing strategies, and product trends in the green industry. Registration is \$55 per person and includes lunch and breaks (see form above). For further information, contact Ted Bilderback at 919-515-1201.

PROGRAM SCHEDULE

9:00–9:30 AM	Registration	
9:30–9:35	Introduction to the Program	Dr. Ted Bilderback
9:35–11:00	Factors Influencing Consumer's Selection of Garden Centers	Dr. Charles Safley
11:00–12:00	Personnel Management for Garden Centers	Dr. Charles Moore
12:00–1:00 PM	Lunch (Included in Registration)	
1:00–3:00	Retail Marketing of Horticultural Commodities	Dr. Ron Larson
3:00–4:00	National Garden Center Trends in Plants and Displays	Dr. J.C. Raulston

CALENDAR OF EVENTS

Event	Date	Time	Location and contacts
GrowerExpo '96	Friday–Monday 5–8 January 1996		Hyatt Regency O'Hare, Rosemont, Ill. Call 800-456-5380 for more details
N.C. Green & Growin' Show and Floral Expo	Friday–Sunday 12–14 January		Benton Convention Center, Winston-Salem, N.C. Contact Bonnie Holloman at 919-779-4618
Growing & Using Bedding Plants / From The Greenhouse to the Landscape	Wednesday 31 January	1:00 to 5:00 pm	Agricultural Resource Center, Lenoir, N.C. Contact Craig Adkins at 704-757-1290 for more details
Roy A. Larson Appreciation & Scholarship Banquet	Saturday 17 February	6:00 to 9:30 pm	Brownstone Hotel, Raleigh, N.C. Contact Bonnie Holloman at 919-779-4618 for more details
NCSU Garden Center Managers Program	Thursday 22 February	9:00 am to 4:00 pm	McKimmon Center, Raleigh, N.C. Contact Ted Bilderback at 919-515-1201 for further information

*Happy
Holidays!*





**NORTH CAROLINA
COMMERCIAL FLOWER GROWERS' ASSOC.**

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In This Issue:

Garden Chrysanthemum Culture the Easy Way.....	1
Growth Regulators for Floricultural Crops.....	4
NCCFGA News	12
Calendar of Events	15