

## Growth Regulator Recommendations

by

John Erwin

Frequently we find it helpful to have all of the current growth regulator information gathered together into one resource. For this reason, we recently compiled the existing information on what growth regulators are effective on the various floriculture crops into one list for ourselves. We thought that this information would be helpful for you as well.

Although a growth regulator may be effective on a crop it may not necessarily be labeled for use on that crop. Therefore, make sure you read the label to insure that it is labeled for use on a crop prior to application. This article does not specifically endorse any specific growth regulator presented.

The information presented in these tables was compiled from a number of different university sources including from North Carolina State University and Michigan State University. In addition, some of the information in the tables resulted from experiments which we conducted at the University of Minnesota.

In most cases, rates are presented in a parts per million (ppm) format. Calculation of the exact amount of growth regulator to add to your spray tank can be calculated using the formulas shown below.

Information: 1 gram active ingredient/liter = 1000 ppm  
 1 gallon = 3.78 liters  
 1 ounce = 28 grams

1) Divide the recommended parts per million by 1000 to get the number of grams needed per liter.

2) Divide the needed number of grams of active ingredient by the actual amount active ingredient (in decimal format) in a growth regulator. This is the amount of growth regulator you will need to add in grams or milliliters to 1 liter of water.

**Example:** Apply 2,500 ppm B-Nine to a chrysanthemum crop.

$$\frac{2,500 \text{ ppm}}{1,000} = 2.5 \text{ grams a.i./ liter}$$

$$\frac{2.5 \text{ grams/ liter}}{.87 (\%) \text{ a.i. in B-Nine}} = 2.87 \text{ grams B-Nine/liter}$$

Therefore, apply 2.87 grams of B-Nine per liter of water to create a solution that has 2,500 ppm active ingredient. On a per gallon basis this would translate into 10.85 grams/gallon (2.87 x 3.78).

Plant Species	Labeled Growth Regulators	Suggested concentration and application method	Timing of application	Comments
Abelmoschus	B-Nine	5000 ppm Spray	as needed	
	Cycocel	1500 ppm Spray	as needed	
African Violet	A-Rest	10-25 ppm Spray	early in development	A-Rest applications help to reduce petiole and pedicel elongation.
Ageratum	A-Rest	33-66 ppm Spray	as needed	High rates of A-Rest may cause leaf crinkling.
	B-Nine	2500-5000 ppm Spray	Apply 2-3 weeks after transplant and again 7 to 10 days later.	Repeat applications every 7-10 days may be needed.
	Bonzi	63 ppm Spray	Apply 2-3 weeks after transplanting or before the plants begin to elongate.	Use caution when using Bonzi, plants will not grow out of stunted conditions caused by overapplications.
	Cycocel			Possibly effective.
Alyssum, Sweet	B-Nine	5000 ppm Spray	as needed	
	Bonzi	8-16 ppm Spray	as needed	
Asiatic Hybrid Lily	A-Rest	25-50 ppm Spray or .25-.5 mg/pot as a drench	Apply as needed starting 2 weeks after emergence.	
Aster	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	2,500-5000 ppm Spray	as needed	Repeat applications every 7-10 days may be needed.
	Cycocel	1,500 ppm Spray		Not effective.

<p>Azalea</p>	<p>GA3 or GA4+7 (ProGib) (Gibrel)</p>	<p>250-1000 ppm Spray</p>	<p>Apply 3 weekly sprays at 250 ppm at the beginning of forcing, if plants have received 3 weeks of cold.</p>	<p>If plants haven't received any cold treatment, apply 1000 ppm weekly for 5 weeks. One or 2 sprays may be applied in the cooler on an experimental basis. Unlike cooled plants, development typically is not as uniform.</p>
	<p>B-Nine</p>	<p>2500-3500 ppm Spray</p>	<p>Apply in 2 applications, 4 to 6 weeks after pinch. Apply early morning increases short day response and early bud formation.</p>	<p>Apply alone - not in combinations. Don't let solution drip on medium.</p>
	<p>Cycocel</p>	<p>2500 ppm Spray</p>	<p>Apply 4 to 6 weeks after last pinch and again 1 week later to control height.</p>	<p>Can produce medium hard plants, slight chlorosis and/or late, uneven flowering. May delay the development after the cool temperature treatment.</p>
	<p>Off-Shoot-O</p>	<p>2.5% - 6.3% Spray</p>	<p>Apply any time the plant is actively growing to chemically pinch. Use a very fine mist to be most effective.</p>	<p>Apply only when have good air movement. Follow label instructions carefully.</p>
<p>Balsam</p>	<p>A-Rest</p>	<p>33-132 ppm Spray</p>	<p>as needed</p>	
<p>Basil, Ornamental</p>	<p>B-Nine</p>	<p>5000-7500 ppm Spray</p>	<p>as needed</p>	
<p>Begonia</p>	<p>B-Nine</p>	<p>5000 ppm Spray</p>	<p>as needed</p>	
	<p>Bonzi</p>	<p>4 ppm Spray</p>	<p>as needed</p>	

	Cycocel	500-1000 ppm Spray	Apply 2 weeks after transplanting.	Cycocel will reduce the height of larger begonias and increase the number of flowers.
Begonia, Tuberous	B-Nine	2500-3000 ppm Spray	as needed	B-Nine is ineffective for height control, but when applied as a spray plant growth is accelerated and time to flower is reduced.
	Cycocel	500-1000 ppm Spray	Apply about 30 days after transplanting for height control.	Foliar discoloration does occur at the higher rates, but the plant will normally outgrow the condition.
Begonia x hiemalis (Reiger Begonia)	Cycocel	1000-3000 ppm Spray	To control height, spray 1 week after start of short days.	Under low light conditions, can apply just before short days. Leaf chlorosis may occur after Cycocel application. Leaves normally do not re-green from Cycocel induced chlorosis. Applications late in development inhibit flower elongation and plants develop undesirably with flowers below the leaf canopy.
	A-Rest	25 ppm Spray	21-28 days after the start of short days.	
Bougainvillea	Atrinal			
	Ethephon (Florel)			
Bromeliad	Ethephon (Florel)	25 mg/plant Pour 2 tsp (10 ml) in 'vase' of plant.	Apply when plants are 1 1/2 to 2 years old to induce flowering	
Browallia	A-Rest	33-66 ppm Spray	as needed	Response varies widely by cultivar.

	B-Nine	2500-3000 ppm Spray	Apply after plants are established in their pots, but before they begin to elongate.	Treatments helps prevent the development of weak shoots.
	Bonzi	16-30 ppm Spray	as needed	
	Cycoceel			Possibly effective.
Caladium	Ethephon (Florel)	2000 ppm Soak	Soak at time of planting.	Soaking has no effect on forcing time but results in more uniform plants in more uniform plants with up to twice the number of shoots. Results however, are variable and cultivar dependent.
Calceolaria	Cycoceel	1000 ppm Spray	Spray when flower buds are just visible.	Marginal leaf burn may occur.
	Cycoceel	3000 ppm Drench	Apply at the 1.5 mm bud stage.	The drench will reduce height up to 50%.
Calendula	A-Rest			Possibly effective.
	B-Nine			
	Bonzi	30-63 ppm Spray	as needed	
	Cycoceel			Not effective.
Calla Lily	GA3 (ProGib) (Gibrel)			
	A-Rest			
	Bonzi			

Campanula	B-Nine	1500-2500 ppm Spray	Apply 1 week after start of long days or on pinched plants, when the shoots are 3-4 cm (1-1 1/2 inches) in length.	Repeated applications may be necessary to achieve desired height control depending on the cultivar. The second application is made 6 weeks after the first treatment.
Carnation	A-Rest	33-66 ppm Spray	as needed	Some cultivars respond poorly. Do not exceed rates of 100 ppm because high levels are toxic to the plant.
	B-Nine			Not effective.
	Bonzi	8-16 ppm Spray	as needed	
	Cycocel	1500 ppm Spray	Apply 30-40 days after sowing. A second application may be made 2-3 weeks later.	Cycocel will cause leaves of carnation to yellow, and the plant will require at least 3 weeks to outgrow the condition.
Celosia	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	2500 ppm Spray	Apply 1-2 weeks after transplanting, before plants begin to elongate.	Repeat applications every 7-10 days may be needed.
	Bonzi	16-50 ppm Spray	as needed	Bonzi will also cause increased branching of celosia plants.
	Cycocel	750-1500 ppm Spray	Apply before plants begin to elongate.	Some leaf damage may result from Cycocel applications.
China Aster	A-Rest	33 ppm Spray	as needed	Higher concentrations cause stunting, reduced branching and delays in flowering.

	B-Nine	2500 ppm Spray	as needed	Not always effective.
	Cycocel	1500 ppm Spray	as needed	Generally gives partial control
Chrysanthemum	B-Nine	2500-5000 ppm Spray	Apply 10-14 days after pinch or after shoots are 1-1 1/2" long. Second application 3 weeks later, if needed.	Don't mix B-Nine with other chemicals. Adjustment on time of application may be necessary depending on season and cultivar.
	A-Rest	25-100 ppm Spray	Apply immediately after pinch and start of short days.	Cultivar requiring 2500 ppm B-Nine requires 25 ppm A-Rest, 5000 ppm B-Nine needs 50 ppm A-Rest.
	A-Rest	0.125 mg-0.5 mg/6" pot as Drench, 6 oz/6" pot	Apply just as root system spreads over outside of soil ball.	Minimum of 180 ml (6 oz) of water /6" pot when applying. Soil must receive uniform application.
	Phosphon L	1000 ppm Drench, 4 oz/6" pot; 3 oz/5" pot	Apply when single stems are 5" long or breaks from pinch are 1" long.	Don't spill on foliage as causes yellowing. Apply 1/2 rate on 'Fred Shoemith', 'Delaware' and 'Blue Ribbon'.
Cineraria	B-Nine	2000-5000 ppm Spray	Application should be made 2 weeks after the cold treatment of before stem elongation.	A 2000 ppm B-Nine application may delay flowering up to 5 days.
Cleome	A-Rest	33-132 ppm Spray	as needed	
	B-Nine			
	Cycocel	1500 ppm Spray	as needed	

Clerodendrum	A-Rest	5 ppm Drench, 30 ml/4" pot	Apply before vining starts to maintain short, bushy plants.	
Coleus	A-Rest	33-66 ppm Spray	as needed	Relatively ineffective in reducing plant height.
	B-Nine			
	Bonzi	50-63 ppm Spray	as needed	Possibly effective.
	Cycocel			
Coreopsis	B-Nine	5000 ppm Spray	as needed	
Cornflower	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	5000 ppm Spray	as needed	
	Cycocel			Not effective.
Cosmos	B-Nine	5000 ppm Spray	as needed	
	Bonzi	16-30 ppm Spray	as needed	
	Cycocel			Not effective.
Crossandra	B-Nine	500 ppm Spray	as needed	One spray is sufficient for pinched plants. Unpinched plants may need 2 applications. B-Nine is active for 6 weeks and has no effect on flowering date.
	Phosphon D	500-1000 ppm Spray	as needed	Hastens flowering and increases branching and flower number.
Cyclamen	GA3 (ProGib) (Gibrel)	10-25 ppm Spray	To hasten flowering, spray 8 weeks before desired date of flower. 10 ppm for F1 hybrid; 25 ppm for most other cultivars.	Spray below leaf canopy to insure wetting flower buds and uniform flowering. Do not apply to the leaves. Buds should be about 3/16 inch in size and about 1 inch long at time of application.



Dahlberg Daisy	B-Nine	5000 ppm Spray	as needed	
Dahlia	A-Rest	0.25-0.50 mg a.i./6" pot Drench	For primary height control apply no later than 2 weeks after planting. Shoots should be approximately 1/4" long.	Dose is 4 fl oz of 2.1-4.2 ppm solution per 6" pot (4 fl oz/110 cubic inches of soil). A standard 48-cell flat contains approximately 259 cubic inches, so apply 9.5 fl oz of spray-drench per 48-cell flat of dahlias. Spray-drench volume will vary with cell sizes (soil volume/flat) used. Response varies by cultivar.
	B-Nine	2500-5000 ppm Spray	Apply before plants begin to elongate.	Repeat applications every 7-10 days may be needed.
	Bonzi	16-30 ppm Spray	as needed	
	Cycoceel	750-1500 ppm Spray	as needed	Yellowing of leaves may occur.
Dianthus	A-Rest	33-66 ppm Spray	as needed	
	B-Nine			Possibly effective.
	Bonzi	63 ppm Spray	as needed	
	Cycoceel	1500 ppm Spray	as needed	
Dicentra (Bleeding Heart)	B-Nine	5000-7500 ppm Spray	Spray before stem elongation begins.	Concentrations of 750 ppm and higher may delay flowering.
Dusty Miller	B-Nine	5000 ppm Spray	Use split applications. Apply first when plants begin to elongate and the second application 7-10 days later.	Repeat applications every 7-10 days may be needed.
	Bonzi	8-16 ppm Spray	as needed	

	Cycoceel	1500 ppm Spray	as needed	One to 3 applications are made as necessary, 10 days apart.
Easter Lily	A-Rest	0.25 mg Drench, 6 oz/6" pot	Apply when lilies are 3-6 inches tall to control height, if needed. Don't apply Jan. 23-Feb. 7 as may reduce bud count.	Not effective if bark medium is used. High temperature and night lighting may negate effect of drench.
	A-Rest	0.5 mg Spray	Apply when lilies are 3-6" tall. Don't apply Jan.23-Feb.7 as may reduce bud count.	Temp above 70° (21°C) as well as long day treatments may negate effect of the spray.
Exacum	A-Rest			
	B-Nine	2500 ppm Spray	Apply 1 week after potting.	Controls size and improves plant quality. One to three applications are recommended.
	Bonzi			
Flowering Cabbage and Flowering Kale	B-Nine	5000 ppm Spray	as needed	
Freesia	A-Rest			
	Bonzi	100 ppm soak	pre-plant	A pre-plant soak can reduce height up to 40%. The concentration needed varies with cultivar.
Fuschia	GA3 (ProGib) (Gibrel)	250 ppm Spray	Apply 4 sprays at weekly intervals to induce tree forms.	Elongating stems will need staking for support.

	A-Rest	25-50 ppm Spray	as needed	Controls height and more flowers may develop.
	B-Nine	3000-4000 ppm Spray	The first application should be made when new shoots first can be seen on unpinched plants or when the shoots are 1-2 cm (1/2-1 inch) on pinched plants. A second application is required 10-14 days after the first.	
Gaillardia	B-Nine			Not effective.
Gazania	B-Nine	5000 ppm Spray	as needed	
Geraniums from cuttings	A-Rest	66-132 ppm Spray	as needed	
	Bonzi	6-16 ppm Spray	as needed	
	Cycocel	2000 ppm Spray	To control height, apply 2-3 weeks after planting in 4" pots.	May cause leaf chlorosis on leaf margins.
	Florel			To keep plants vegetative
	GA3 (ProGib) (Gibrel)	250 ppm Spray	Apply 4 sprays at weekly intervals to induce tree forms.	Elongating stems will need staking for support.

	GA3 (ProGib) (Gibrel)	1-5 ppm Spray	Apply when a few florets in the inflorescence begin to show color. Earlier treatment can result in excessive peduncle elongation.	Inflorescence increase in size and can remain in marketable condition up to 2 weeks longer.
Geraniums from seed	A-Rest	66-132 ppm Spray	Apply at 6-7 true leaf stage. May reapply 2-3 weeks later.	Delays flowering 3-5 days. Very good for packs or closely spaced plants.
	Bonzi	6-16 ppm Spray	as needed	
	Cycocel	1500 ppm Spray	Apply 4-5 true leaf stage. (May apply 1000 ppm at 2 weeks intervals up to 4 times for early seed dates). To induce earlier flowering and for height control.	Plants flower about 7 days earlier. May cause leaf chlorosis on leaf margins. Late applications will reduce flower size and may delay flowering.
	Ethephon (Florel)	500 ppm Spray	Apply at 6-7 true leaf stage. May reapply 2-3 weeks later.	Delays flowering 3-5 days. Very good for packs or closely spaced plants.
	GA3 (ProGib) (Gibrel)	5-15 ppm Spray	Apply when flower buds first seen down in canopy.	Speeds flowering 10-21 days depending on cultivar.

	A-Rest	33-66 ppm Spray	as needed	
Gerbera Daisy	B-Nine	2500 ppm Spray	Apply 10-14 days after transplanting.	In some instances a second application may be necessary. Controls the length of flower stalks.
Gloxinia	B-Nine	800 ppm Spray	Apply 1-2 weeks after potting when light conditions are low (less than 1500 ft candles).	Apply before plants start to stretch.
	B-Nine	300-500 ppm Spray	Apply later to control late petiole stretch.	
Gomphrena	A-Rest			Not effective.
	B-Nine			Not effective.
	Cycocel			Not effective.
	Bonzi	62.5 ppm spray	Apply when 1-2 weeks after transplanting or when they have developed 2-3 pairs of true leaves.	
Helianthus	B-Nine	1500-2500 ppm Spray	as needed	
Hibiscus	B-Nine			
	Bonzi			
	Cycocel			

Hybrid Lillies	A-Rest	0.25 mg Drench, 6 oz/6" pot	Apply when lillies are 3-6 inches tall to control height, if needed.	Split applications are recommended. Not effective if bark medium is used. High temperature and night lighting may negate effect of drench.
	A-Rest	0.5 mg Spray	Apply when lillies are 3-6" tall.	Temperatures above 70c (21oc) as well as long day treatments may negate effect of the spray.
	Bonzi			
Hyacinth	A-Rest	2-4 mg Drench, 3 oz/6" pot	Drench 1 day after the start of forcing.	Taller cultivars require 4 mg/pot.
	Ethephon	1000-2000 ppm Spray	Apply when plants are 3-4" tall before florets show color.	Do not water foliage for 12 hours after application. Apply in a well ventilated greenhouse.
Hydrangea	B-Nine	5000-7500 ppm Spray	During the growing period apply 4 weeks after pinch or when shoots are 1-2 inches in length, but not after Aug. 5. Repeat applications may be needed.	Any height reduction during the summer phase will result in shorter plants the following forcing season.
	B-Nine	2500 ppm Spray	During the forcing period apply first spray between second and third week (4-5 leaf stage) second spray 1 week later.	Exact requirements vary with cultivar and date. Can apply after buds are visible if necessary, but no later than 6 weeks before flower. Stem elongation tends to be greater under low night temperatures and long days of late spring.

	Butyne-diol	1% Spray	Apply 7-10 days before bringing into storage to defoliate mature plants.	Takes 1 week at warm temperature.
	Vapam	Dissolve in water and sprinkle on storage flower - 1 tsp/100 ft <sup>3</sup> of storage space	Apply when first bring plants into storage to defoliate mature plants.	Dissolve in water and sprinkle on floor when flats are first brought into storage. More than 1 treatment may be necessary at weekly intervals.
	Ethephon (Florel)	1000-3000 ppm Spray	as needed	Also causes height reduction during forcing.
	GA <sub>3</sub> (ProGib) (Gibrel)	5 ppm Spray	Apply up to 4 weekly sprays at the start of forcing to overcome insufficient cooling.	Use with caution as plants may become leggy. One or two sprays may be applied in the cooler on an experimental basis only.
Hypoestes	Cycoce	1500 ppm Spray	as needed	
Impatiens	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	7500 ppm Spray	Apply when the plants begin to elongate.	
	Bonzi	63 ppm Spray	as needed	Multiple applications may be needed.
	Cycoce			Possibly effective.
Jerusalem Cherry	Bonzi			
	Ethephon (Florel)	150 ppm Spray	Apply when fruits are size of a pea.	May reduce time by 7-14 days without causing any damage to the plants.
Justicia	A-Rest			

Kalanchoe	A-Rest	0.25 mg-0.5 mg Drench, 2 oz/4" pot	Apply 2 weeks after start of short days.	No significant effect on time to flower.
	B-Nine	5000 ppm Spray	Every 2 weeks after pinching on tall cultivars to control height.	A second application 4-5 weeks after the start of short days controls the height of the individual flower stems. A third application may be required under extremely high temperatures. May delay flowering about 1 week.
Lisianthus	B-Nine	2500-5000 ppm Spray	as needed	
Lobelia	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	3000-5000 ppm Spray	Apply before plants begin to elongate.	
	Bonzi	4-8 ppm Spray	as needed	
Marigold, African	A-Rest	33-66 ppm Spray	as needed	Repeat applications of A-Rest of B-Nine every 14-21 days may be needed.
	B-Nine	2500-5000 ppm Spray	Apply when the second set of true leaves have developed.	
	Bonzi	63 ppm Spray	Apply when the second set of true leaves have developed.	Plants will not outgrow an overdose of Bonzi like they would B-Nine.
	Cycocel	750-1500 ppm Spray	as needed	Yellowing of the leaves may result.
Melampodium	B-Nine	5000 ppm Spray	as needed	
Morning Glory	A-Rest			
	B-Nine			Not effective.



	Cycocel				
Narcissus	Ethephon (Florel)	500-1000 ppm Drench, 3 oz/6" pot	Apply when buds are visible.	Not effective.	If applied before buds are visible, may cause bud blasting of some cultivars.
	Ethephon (Florel)	1000-2000 ppm Spray	Apply when leaves and/or floral stalks are 4-5" long.		Do not apply if flower bud is highly visible. Do not wet the foliage for 12 hours after treatment.
New Guinea Impatiens	Bonzi	63 ppm Spray	as needed		
Nicotiana	B-Nine	5000 ppm Spray	as needed		
Pachystachys (Golden Shrimp Plant)	A-Rest	50-100 ppm Spray	Apply 2 weeks after pinch.		There is an increase in number of lateral branches.
	Atrinal				
	Ethrel				
Pansy	A-Rest				Not effective.
	B-Nine				Possibly effective.
	Bonzi	16-33 ppm Spray	Apply when the plants begin to elongate.		Pansies are very responsive to Bonzi, so start with lowest concentration.
	Cycocel	1000 ppm spray	Apply before the flower buds appear of flower size will be reduced.		Apply as 1 to 3 foliar sprays. Cycocel will also yellow the leaves, with the plants requiring 2 to 4 weeks to grow out of the yellowing.
Paperwhites	Ethephon (Florel)	2000 ppm Spray	Apply when shoots are 4-5" long.		Foliage must be dry at time of treatment. Do not wet the foliage for 12 hours after treatment.
Pepper	A-Rest				

	Etherel	150 ppm Spray	Apply when fruit is about the size of a pea.	Used to speed up the coloring of fruit by 7 to 14 days.
Perennials	A-Rest			
Petunia	A-Rest	132 ppm Spray	as needed	Make the first application when plants are a half-dollar (1 7/32") in diameter. Additional applications can be made, if necessary, 7 to 10 days apart.
	B-Nine	2500-5000 ppm Spray	First application is made when the plants are about 5 cm in diameter, before the plants begin to elongate.	
	Bonzi	63 ppm Spray	as needed	
	Cycocel			Not effective.
Phlox	A-Rest			Not effective.
	B-Nine	5000 ppm Spray	as needed	
	Cycocel			Not effective.
Poinsettia	Cycocel	750-1,500 ppm Spray	Avoid wetting foliage for 24 hours after application.	
	B-Nine and Cycocel	750 ppm B-Nine plus 750 ppm Cycocel		
	A-Rest	.25 mg Drench		
	Bonzi	.25 mg Drench		
	Sumagic	.10 mg Drench		
Primula	B-Nine	1000-2000 ppm Spray	as needed	Reduces stem elongation.

	Silver thiosulfate (STS)	10 ppm Spray	at flowering	To increase flower longevity.
Portulaca	B-Nine	5000 ppm Spray	as needed	
Roses, pot	Bayleton			A systemic fungicide which gives some height control.
	Bonzi	5-15 ppm Drench	Apply when flowering stems are 3" long.	The most effective growth regulator on pot roses.
	Cycocel			May control height on some cultivars but in general, is ineffective.
Salvia	A-Rest	33-66 ppm Spray	as needed	A-Rest may speed flower bud set for salvia.
	B-Nine	5000 ppm Spray	Apply when the plants begin to elongate.	Multiple applications may be needed.
	Bonzi	30-63 ppm Spray	as needed	
	Cycocel	750 ppm Spray	Apply in 2 applications, spaced a week apart, of 750 ppm each.	Some cultivars may be damaged by Cycocel. Test Cycocel on a small number of plants applying to the entire crop.
Schlumbergera	Benzyladenine (BA)	50-100 ppm Spray	Apply 10-14 days after the start of short days or when buds can first be seen under normal short days to increase bud number.	

	Silver thiosulphate (STS)	200 ppm Spray	Apply 2 weeks prior to market to reduce bud drop induced by water stress or ethylene.	
Shrimp Plant	Bonzi			
	Ethephon (Florel)			
Snapdragon	A-Rest	33-66 ppm Spray	as needed	Response varies with cultivar.
	B-Nine	1500-2500 ppm Spray	as needed	Possibly effective.
	Bonzi	63 ppm Spray	Apply when plants begin to elongate. More than one application may be necessary.	Repeat applications every 14-21 days may be needed.
	Cycocel			Possibly effective.
Tulip	A-Rest	0.125-0.50 mg Drench, 4 oz/6" pot; 2 oz/4" pot	Apply 1-4 days after bringing into greenhouse	Response varies with cultivars; not as effective if applied after 4 days in greenhouse.
Verbena	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	2500-4000 ppm Spray	Apply before the plants begin to elongate.	A second application may be made 7-10 days later.
	Bonzi	30 ppm Spray	as needed	
	Cycocel	750-1500 ppm Spray	Make 2 applications a week apart.	Cycocel may cause the leaves to yellow, but the plant will usually grow out of this condition.
Vinca	A-Rest	33-50 ppm Spray	as needed	

	B-Nine	2500 ppm Spray	Apply after plants have become established.	
	Bonzi	8-16 ppm	as needed	Bonzi can cause foliar injury on vinca, especially during warm weather.
	Cycocel			Possibly effective.
Zinnia	A-Rest	33-66 ppm Spray	as needed	
	B-Nine	2500-5000 ppm Spray	30-50 days after sowing	<i>Z. angustifolia</i> should receive 1250-1800 ppm 30-40 days after sowing.
	Cycocel			Possibly effective.