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1995 SUMMER BEDDING PLANT TRIAL SUMMARY

Douglas A. Bailey, Department of Horticultural Science, NCSU

(The following is a summary of the 1995 summer trials. You can receive a copy of the full report, complete with species summaries, series comparison tables, weekly cultivar ratings, and plant height and diameter comparisons. To receive a copy of the 1995 report, call me at [919] 515-1195, FAX me at [919] 515-7747, or e-mail me at doug_bailey@ncsu.edu and request "Horticultural Research Series Number 117.")

Over 500 entries of annual and perennial plants were evaluated during the 1995 bedding plant season at test gardens in Raleigh, North Carolina. The trial gardens are used each year to evaluate bedding plants for landscaper and home owner use.

The trial gardens are located at the Horticulture Field Lab, 4301 Beryl Road, in Raleigh. The site is located on latitude 35°47'N, longitude 78°42'W with an elevation of 400 feet. Transplants were grown in 2.5 inch × 2.2 inch containers, and most were planted in the trial garden on 23 May 1995. A few slower selections were planted when ready. Plant spacing in the trials was 18 inches × 24 inches (in-row × between-row spacing). Seven plants of each entry were used to evaluate the performance of the cultivars with the exception of All America Selections judged entries, which had 14 plants each.

All plants were grown in full sun except for begonias, hypoestes, impatiens, and tuberous begonias; these were grown under 55% shade.

When needed, water was applied using overhead irrigation.

Temperatures were very close -- slightly above in May, July, and August and slightly below in June and September -- to average for the summer season (Table 1, Figure 1). Looking at the entire 5-month season, temperatures were moderate and averaged almost 1% below normal (74 °F average daily temperature).

Rainfall received during the 5-month period (22.6 inches) was 7% above average, but most of it fell in June while July was extremely dry (Figure 2). Although August rainfall was above average, over 70% of the monthly total fell on August 27; the rest of the month was very dry.

Plants were given a visual rating by the same individual once a week beginning 7 June 1995, two weeks after planting through 18 weeks after planting; the final evaluation date was 27 September 1995. The rating was based on plant performance and appearance, including floriferousness, plant size and shape, and freedom from insect and disease problems.

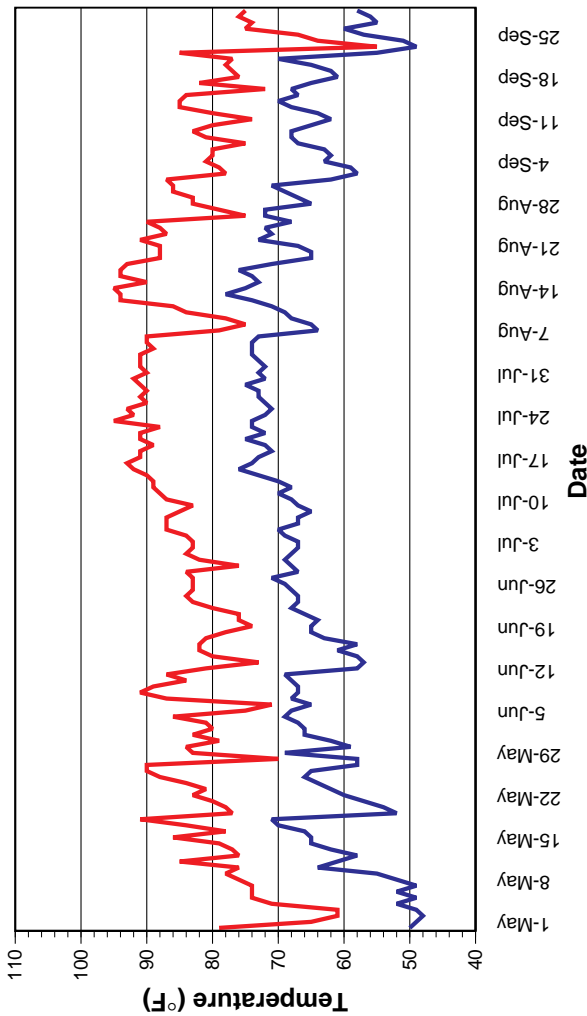


Figure 1. Daily minimum and maximum temperatures for Raleigh, North Carolina from May 1 through September 30, 1995.

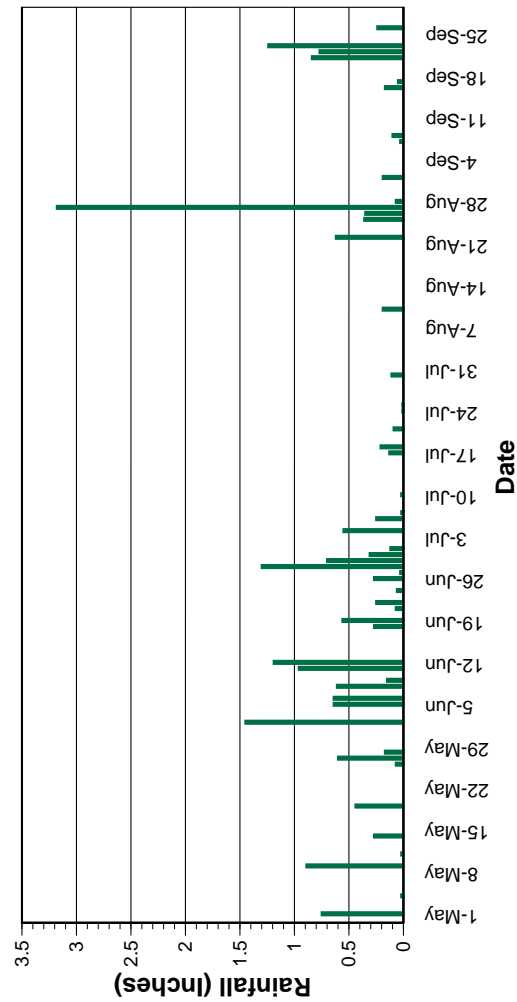


Figure 2. Rainfall received from May 1 through September 30, 1995.

Weekly ratings were averaged to provide an overall rating for the entire season. We used the seasonal average ratings to select the N.C. State Leaders of the Pack and the NCSU Exceptional Performance Winners.

Each year, the best of the best, those cultivars that exemplify outstanding performance during the trials, will be recognized as Exceptional Performance award winners. The winners are judged on full-season performance and are recommended as outstanding selections for our region. Growers, retailers and landscapers are encouraged to consider these cultivars first for their color needs. Only four of the over 500 entries in the 1995 trial garden were selected as Exceptional Performance Award Winners:

Table 1. Temperature and rainfall from May to September 1995 and 30-year temperature and rainfall averages for Raleigh, N.C.

Month	1995 average daily temp. (- F) and % change from 30-year avg.	30-year average daily temp. (- F)	1995 monthly rainfall (inches) and % change from 30-year avg.	30-year average monthly rainfall (inches)
May	68.5 (+1%)	68.1	3.23 (-23%)	4.22
June	73.2 (-2%)	74.9	9.15 (+145%)	3.73
July	79.7 (+1%)	78.8	1.83 (-62%)	4.84
August	79.2 (+2%)	78.0	4.77 (+6%)	4.52
September	70.0 (-3%)	72.1	3.63 (-6%)	3.85

1995 Exceptional Performance Winners

1. *Petunia*, 'Purple Wave' (HN) -- from cuttings
2. *Petunia*, 'Purple Wave' (AAS) -- from seed
3. *Verbena*, 'Homestead Purple' (PDN)
4. *Evolvulus*, 'Blue Daze' (HN)



The following were selected in 1995 on their ability to display attractive landscape color throughout the majority of the season. At any one time, other entries may have made a better short-term showing, but the "Leaders of the Pack" were selected for dependable full-season performance as a source of color in the landscape.

1995 NCSU Leaders of the Pack

Ageratum

'Blue Hawaii' (BG), 'White Hawaii' (BG)

Begonia

Bicolor: 'Olympia Starlet' (BEN)

Mix: 'Espresso Mix' (DHN)

Pink: 'Olympia Pink' (BEN), 'Partygirl' ((BEN), 'All Round Greenleaved Pink' (DHN), 'All Round Darkleaved Pink' (DHN)

Red: 'Inferno Red' (DHN), 'Olympia Red' (BEN)

Rose: 'All Round Darkleaved Rose' (DHN), 'Vision Bright Rose' (BEN), 'Victory Rose' (GOLD)

Salmon: 'Olympia Salmon Scarlet' (BEN)

Scarlet: 'Partyboy' (BEN), 'Ambassador Scarlet' (DHN)

White: 'All Round Greenleaved White' (DHN), 'Partylove' (BEN), 'Olympia White' (BEN), 'Partydress' (BEN), 'Whiskey' (BEN)

Celosia

Cockscomb: '94F01' (AAS)

Plume: 'Apricot Brandy' (SAK)

Dianthus

'Floral Lace Rose' (BALL)

Dusty Miller

'Silver Lace' (GLC)

Evolvulus

'Blue Daze' (HN)

Gaillardia

'Red Plume' (AAS)

Gazania

'Sunshine Mix' (AAS)

Geranium

'Satisfaction #864' (BALL), 'Designer Pink Pearl' (BALL), 'Designer Coral' (BALL)

Globe Amaranth

Lavender: 'Lavender Lady' (PK)

Purple: 'Rainbow Lilac' (VN), 'Gnome Purple' (SAK)

Rose: 'Rainbow Rose' (VN)

Hypoestes

White: 'Splash Select White' (VN)

Pink: 'Splash Select Pink' (VN)

Rose: 'Splash Select Rose' (VN)

Impatiens

Bicolor: 'Impulse Orange Bicolor' (S&G), 'Impulse Bright Eye' (S&G)

Blue/Violet: 'Impulse Lilac Blue' (S&G), 'Impulse Lilac' (S&G), 'Accent Violet' (GOLD)

Mix: 'Tempo Wedgewood Mix' (BG), 'Accent Mystic Mix' (GOLD)

Orange: 'Impulse Orange' (S&G), 'Impulse Salmon Orange' (S&G)

Pink: 'Impulse Appleblossom' (S&G), 'Impulse Pink Blush' (S&G)

Red: 'Showstopper Burgundy' (BALL), 'Accent Burgundy' (GOLD), 'Accent Cranberry' (GOLD)

Rose: 'Accent Rose' (GOLD), 'Impulse Rose' (S&G)

Salmon: 'Dazzler Coral' (BALL), 'Tempo Peach Frost' (BG)

White: 'Showstopper White' (BALL), 'Impulse White' (S&G)

Marigold

'Little Hero Yellow' (BG), 'Bounty Gold' (SAK)

Melampodium

'Showstar' (VN)

Mexican Cigar Plant

Cuphea platycentra (GLC)

Mexican Heather

Mexican Heather (HN)

Narrow-Leaf Zinnia

White: 'Star White' (BUR), 'Tropic Snow' (PK)

Orange: 'Golden Orange' (PK), 'Classic' (VN)

Yellow: '92BP16' (AAS)

Nierembergia

'Mont Blanc' (AAS)

Petunia

Blue: 'Purple Wave' (HN) from cuttings, 'Purple Wave' (AAS) from seed, 'Primetime Blue' (GOLD)
 Mix: 'Primetime Crystals Mix' (GOLD)
 Pink: 'Merlin Pink Morn' (AAS), 'Primetime Pink Morn' (AAS), 'Fantasy Pink' (GOLD)
 Red: 'Fantasy Red' (GOLD), 'Fantasy Crystal Red' (GOLD), 'Celebrity Red' (BG)
 Rose: 'Merlin Rose' (SAK), 'Merlin Rose Morn' (SAK), 'Rose Madness' (BALL)
 Salmon: 'Merlin Salmon' (SAK), 'Primetime Salmon Morn' (GOLD)
 White: 'Merlin White' (SAK)

Salvia

Blue: 'Signum' (BG), 'Strata' (AAS)
 Pink: 'Coral Nymph' (PK)
 Red: 'Lady in Red' (AAS)
 White: 'Snow Nymph' (PK)

Sanvitalia

'Floro Pleno' (PK)

Snapdragon

'Carpet Red' (SAK), 'Carpet Orchid' (SAK), 'Carpet Rose' (SAK), 'Carpet Yellow' (SAK)

Statice

'Premium Sunset' (GRS), 'Compindi Light Blue' (BEN)

Tuberous Begonia

'Charisma Coral' (BEN)

Verbena

Blue/Purple: 'Homestead Purple' (PDN), 'Imagination' (AAS), 'Tex Tuf Purple' (PDN)
 Pink: 'Texas Appleblossom' (PDN), 'Michelle' (PDN), 'Silver Anne' (PDN), 'Sissinghurst' (PDN)
 Red: 'Summer Blaze' (PDN)
 Rose: 'Batesville Rose' (PDN), 'Fiesta' (PDN)
 White: *V. tenuisecta* 'White' (PDN)

Vinca

'Pacifica Polka Dot' (VN), 'Apricot Delight' (VN), 'Pacifica Punch' (VN), 'Cooler Icy Pink' (VN)

Sources of Seeds and Plants

The following companies graciously sponsored the 1995 trial gardens. The companies are acknowledged in the ratings table and in the listings by the abbreviation that appears to the left of the company name. Appreciation is also given to Fafard, Inc. and to the North Carolina Flower Growers' Association for their contributions towards the trials.

- **AAS** All-America Selections, 1311 Butterfield Road, Suite 310, Downers Grove, IL 60515
- **BALL** Ball Seed Co., P.O. Box 335, West Chicago, IL 60185
- **BEN** Ernst Benary of America, Inc., 1444 Larson Street, Sycamore, IL 60178
- **BG** Bodger Seeds Ltd., 1800 North Tyler Avenue, Lompoc, CA 91733 3618
- **BUR** W. Atlee Burpee Co., 300 Park Avenue, Warminster, PA 18974
- **DHN** Dæhnfeldt Inc., P.O. Box 947, Albany, OR 97321
- **GLC** Fred C. Gloeckner Company, Inc. 600 Mamaroneck Avenue, Harrison, NY 10528
- **GOLD** Goldsmith Seeds, Inc., P.O. Box 1349, Gilroy, CA 95020
- **GRS** G.S. Grimes Seeds, P.O. Box 640, Concord, OH 44077 0640
- **HN** Homewood Nursery, 10809 Honeycutt Rd., Raleigh, NC 27614
- **PDN** Plant Delights Nursery, 9241 Sauls Road, Raleigh, NC 27603
- **PK** Park Seed Wholesale, Cokesbury Road, Greenwood, SC 29647
- **S&G** S&G, 3010 Woodcreek Drive, Suite B, Downers Grove, IL 60515
- **SAK** Sakata Seed America Inc., 2048 Cherry Run Ct. N.W., Grand Rapids, MI 49504
- **VN** Vaughan's Seed Co., 5300 Katrine Avenue, Downers Grove, IL 60515

GREENHOUSE ORNAMENTAL INSECT AND RELATED PEST CONTROL

James R. Baker, Entomology Extension and
Douglas A. Bailey, Horticultural Science Extension
North Carolina State University

This table lists pesticides currently labeled for use in commercial floriculture greenhouses for use on ornamental plants. Unless noted in the precautions and remarks column, the pesticide listed is labeled for any greenhouse flower or foliage plant. Read individual labels for any restrictions on use prior to application; labels do change. The abbreviation "NA" stands for not applicable; used when a column is not applicable for a product. Do not confuse volume rates (given in fluid ounces [fl oz]; 8 fl oz = 1 cup) with weight rates (given in avoirdupois ounces [oz]; 16 oz = 1 pound [lb]). Do not equate 1 fl oz with 1 oz; many dry products such as wettable powders should be weighed out for precise concentrations. Other volume and weight abbreviations used include: Tablespoon (Tbsp), teaspoon (tsp), pint (pt), gallon (gal), and pound (lb). Aerosol product and vaporized product application rates are based on either greenhouse area (ft²) or greenhouse volume (ft³).

†Insecticide classifications: BO - botanical; CA - carbamate; CH - chlorinated hydrocarbon; IGR - insect growth regulator; MI - microbial; OP - organophosphate; PY - pyrethroid
Insecticide formulations: A - aerosol (includes compressed total release products and smoke generator products); AS - aqueous suspension; D - dust; DF - dry flowable; EC - emulsifiable concentrate; F - flowable; G - granular; L - water-soluble liquid; ME - microencapsulated; P - pelleted; SP - soluble powder; WG - water-dispersible granules; WP - wettable powder.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Aphids	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	Orthene 75 soluble powder is also available for use on tobacco. When spraying ornamental plants, be sure to use Orthene Tree, Turf and Ornamentals product. Apply total release aerosols using a rate of 1 lb per 1,500 to 3,000 ft ² . Treat as late in the day as possible. Apply directed spray aerosol using a release rate of 5 to 10 seconds per 100 ft ² .
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC) 4.5 EC (Neemazad)	2 1/2 to 5 tsp 1/2 tsp 1/8 to 1/4 tsp	40 to 80 fl oz 8 fl oz 2 1/4 to 4 1/2 fl oz	4 hours 4 hours 4 hours	
	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	Three to 5 sprays needed for adequate control.
	bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)	1 Tbsp	12 to 20 oz	See product label	Avoid excessive runoff. Labeled for chrysanthemums only.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	Apply aerosol using a rate of 1 lb per 1,500 to 3,000 ft ² . Treat as late in the day as possible. Building should be vented before reentry.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Aphids, continued	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	Diazinon should not be applied directly to open blooms; it is not labeled for use on poinsettias.
	dichlorvos -- OP 5 A (Vapona)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	Dichlorvos may damage chrysanthemum varieties Shasta, Pink Champagne, and Nightingale.
	endosulfan -- CH 24.2 EC (Thiodan) 50 WP (Thiodan) 5 A (Thiodan)	2 tsp 1 Tbsp NA -- Smoke Generator	2 pt 1 lb NA -- Smoke Generator	24 hours 24 hours See product label	Apply as needed. Repeat applications may be necessary. Thiodan is phytotoxic to some varieties of geraniums and chrysanthemums.
	fenoxycarb -- IGR 0.6 A (PT 2100 Preclude)	NA -- Aerosol	NA -- Aerosol	See product label	Apply aerosol using a rate of 1 lb per 1,500 to 3,000 ft ² . Treat as late in the day as possible. Building should be vented before reentry.
	fenpropathrin -- PY 30 EC (Tame)	² / ₃ tsp	10 ² / ₃ fl oz	See product label	Can be used with ¹ / ₃ lb per 100 gallons acephate (Orthene Turf, Tree and Ornamental 75 SP).
	fluvalinate -- PY 22.3 F (Mavrik)	¹ / ₈ to ⁵ / ₈ tsp	2 to 10 fl oz	See product label	Also labeled as a plant dip.
	horticultural oil -- Other 98.8 EC (Ultra Fine, Sun Spray)	2 ¹ / ₂ to 5 Tbsp	1 to 2 gallons	4 hours	Oil is a contact killer of pests; thorough coverage is required. May cause foliar injury if sprayed during extremely humid conditions.
	imidacloprid -- Other 1 G (Marathon)	NA -- Granular	NA -- Granular	12 hours	Can be incorporated into substrate at 3 lb per yd ³ ; broadcast over flats at 9 to 15 oz per 1,000 ft ² ; or surface applied to pots (rate varies with pot size -- use ¹ / ₃ tsp (1.3 grams) per 6" pot).
	kinoprene -- IGR 65.1 EC (Enstar II)	¹ / ₂ to ² / ₃ tsp	5 to 10 fl oz	4 hours	
	lindane -- CH 25 WP (Lindane)	1 Tbsp	1 lb	See product label	
	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	Malathion may injure begonia, crassula, ferns, petunia, orchids, pansy, African violet, gloxinia, some red carnations, and some rose varieties.
	naled -- OP 58 EC (Dibrom)	NA -- Vaporized	NA -- Vaporized	24 hours	Apply on steam pipes at rate of 1 oz per 10,000 ft ³ of greenhouse volume. Then heat pipes to 160 °F. Naled will corrode pipes with continued use. Naled vapor treatment may injure 'White Butterfly' and 'Golden Rapture' rose, 'Pink Champagne' chrysanthemums, wandering jew, poinsettias, and Dutchman's pipe.
	nicotine sulfate -- Other 40 EC (Nicotine Sulfate)	1 ¹ / ₂ tsp	1 ¹ / ₂ pt	See product label	Nicotine sulfate will damage young chrysanthemums and lilies.
oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	Ornamental uses of Vydate L are being phased out. Apply 22 to 30 oz of Oxamyl granules per 1,000 ft ² . Equates into ¹ / ₈ tsp per 6" to 10" azalea-depth pot.	

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Aphids, continued	permethrin -- PY 36.8 EC (Astro)	1/4 to 1/2 tsp	4 to 8 fl oz	24 hours	
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	Pyrethrins are not recommended for use directly on open blooms or on bracts showing color. Apply PT 1100 using a rate of 1 lb per 3,000 ft ² . Treat as late in the day as possible. Ventilate prior to reentry.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	Apply PT 1200 TR using a rate of 1 lb per 1,500 to 3,000 ft ² . Treat as late in the day as possible. Ventilate prior to reentry. Apply PT 1200 DS using a release rate of 5 to 10 seconds per 100 ft ² .
	soap -- Other 49 EC (Insecticidal Soap, M-Pede)	2 1/2 fl oz	7 1/2 qt	12 hours	Do not apply more than two times consecutively; too frequent of applications can cause foliar discoloration
	sulfotepp -- OP 15 A (Dithio, Plantfume 103)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	Consult product label for recommended rates.
Armyworms	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC) 4.5 EC (Neemazad)	2 1/2 to 5 tsp 1/2 tsp 1/8 to 1/4 tsp	40 to 80 fl oz 8 fl oz 2 1/4 to 4 1/2 fl oz	4 hours 4 hours 4 hours	
	<i>Bacillus thuringiensis</i> -- MI 3.2 AS (Dipel) 15 AS (Victory)	1 to 2 tsp 2 1/2 to 5 tsp	1 to 2 pt 40 to 80 fl oz	4 hours 4 hours	
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
	Beet Armyworm	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours
fenpropathrin -- PY 30 EC (Tame)		2/3 tsp	10 2/3 fl oz	See product label	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Beet Armyworm, continued	permethrin -- PY 36.8 EC (Astro)	1/4 to 1/2 tsp	4 to 8 fl oz	24 hours	
Broad Mite	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	dienochlor -- CH 50 WP (Pentac) 38 F (Pentac)	1 tsp 1/2 tsp	8 oz 8 fl oz	See product label See product label	Repeat pentac applications in 5 to 14 days for effective control.
Brown Soft Scale	bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)	3/4 Tbsp	5 1/2 oz	See product label	Avoid excessive runoff.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	sulfotepp -- OP 15 A (Dithio, Plantfume 103)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.
Cabbage Looper	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC) 4.5 EC (Neemazad)	2 1/2 to 5 tsp 1/2 tsp 1/8 to 1/4 tsp	40 to 80 fl oz 8 fl oz 2 1/4 to 4 1/2 fl oz	4 hours 4 hours 4 hours	
	<i>Bacillus thuringiensis</i> -- MI 3.2 AS (Dipel) 15 AS (Victory)	1 to 2 tsp 2 1/2 to 5 tsp	1 to 2 pt 40 to 80 fl oz	4 hours 4 hours	
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	dichlorvos -- OP 5 A (Vapona)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	naled -- OP 58 EC (Dibrom)	NA -- Vaporized	NA -- Vaporized	24 hours	See aphids section for comments.
	permethrin -- PY 36.8 EC (Astro)	1/4 to 1/2 tsp	4 to 8 fl oz	24 hours	
	pyrethrins -- BO 6 EC (Pyreneone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Caterpillars	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	See aphids section for comments.
	azadirachtin -- BO 4.5 EC (Neemazad)	1/8 to 1/4 tsp	2 1/4 to 4 1/2 fl oz	4 hours	
Chrysanthemum Gall Midge	lindane -- CH 25 WP (Lindane)	1 Tbsp	1 lb	See product label	For use on chrysanthemums only. Weekly applications may be needed.
Crickets	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	soap -- Other 49 EC (Insecticidal, M-Pede)	2 1/2 fl oz	7 1/2 qt	12 hours	See aphids section for comments.
Cucumber Beetle	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	See aphids section for comments.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
Cutworms	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC)	2 1/2 to 5 tsp 1/2 tsp	40 to 80 fl oz 8 fl oz	4 hours 4 hours	
	<i>Bacillus thuringiensis</i> -- MI 3.2 AS (Dipel) 15 AS (Victory)	1 to 2 tsp 2 1/2 to 5 tsp	1 to 2 pt 40 to 80 fl oz	4 hours 4 hours	
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Cutworms, continued	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
Cyclamen Mite	endosulfan -- CH 24.2 EC (Thiodan) 50 WP (Thiodan) 5 A (Thiodan)	2 tsp 1 Tbsp NA -- Smoke Generator	2 pt 1 lb NA -- Smoke Generator	24 hours 24 hours See product label	See aphids section for comments.
	hot water (115 °F)				Submerge infested plants for 15 minutes.
Earwigs	soap -- Other 49 EC (Insecticidal, M-Pede)	2 1/2 fl oz	7 1/2 qt	12 hours	See aphids section for comments.
Fungus Gnats	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC)	2 1/2 to 5 tsp 1/2 tsp	40 to 80 fl oz 8 fl oz	4 hours 4 hours	
	<i>Bacillus thuringiensis</i> -- MI 3.2 AS (Dipel) 15 AS (Victory)	1 to 2 tsp 2 1/2 to 5 tsp	1 to 2 pt 40 to 80 fl oz	4 hours 4 hours	
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	fenoxycarb -- IGR 25 WP (Precision)	1/2 tsp	4 oz	See product label	
	kinoprene -- IGR 65.1 EC (Enstar II)	1/2 to 2/3 tsp	5 to 10 fl oz	4 hours	Enstar II is for larvae control only.
	nematodes (<i>steinerema carpocapsae</i>) -- Other 17 AS (Exhibit)	---	---	See product label	Apply 1 gallon per 10,000 ft ² for larvae control. Make three applications, each 7 days apart for best results.
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	permethrin -- PY 36.8 EC (Astro)	1/4 to 1/2 tsp	4 to 8 fl oz	24 hours	See beet armyworm for comments.
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
Hemispherical Scale	bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)	3/4 Tbsp	5 1/2 oz	See product label	Avoid excessive runoff.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Leafhoppers	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	See aphids section for comments.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	fenpropathrin -- PY 30 EC (Tame)	1/3 to 2/3 tsp	5 1/3 to 10 2/3 fl oz	See product label	See aphids section for comments.
	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	See aphids section for comments.
	permethrin -- PY 36.8 EC (Astro)	1/4 to 1/2 tsp	4 to 8 fl oz	24 hours	See beet armyworm for comments.
	pyrethrins -- BO 6 EC (Pyreneone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
Leafminers	abamectin B1 -- Other 2 EC (Avid)	1/2 tsp	8 fl oz	See product label	Do not use on ferns or conifers.
	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC) 4.5 EC (Neemazad)	2 1/2 to 5 tsp 1/2 tsp 1/8 to 1/4 tsp	40 to 80 fl oz 8 fl oz 2 1/4 to 4 1/2 fl oz	4 hours 4 hours 4 hours	
	bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)	3/4 Tbsp	5 1/2 oz	See product label	Avoid excessive runoff.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyromazine -- IGR 75 WP (Citation)	—	2 2/3 oz	See product label	Must wear protective clothing when harvesting. Labeled for chrysanthemum only.
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	dichlorvos -- OP 5 A (Vapona)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Leafminers, continued	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	See aphids section for comments.
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	permethrin -- PY 36.8 EC (Astro)	1/4 to 1/2 tsp	4 to 8 fl oz	24 hours	See beet armyworm for comments.
Leaf Rollers	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC)	2 1/2 to 5 tsp 1/2 tsp	40 to 80 fl oz 8 fl oz	4 hours 4 hours	
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	naled -- OP 58 EC (Dibrom)	NA -- Vaporized	NA -- Vaporized	24 hours	See aphids section for comments.
	pyrethrins -- BO 6 EC (Pyrenone)	1/8 to 1 1/2 tsp	2 to 12 fl oz	See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
	Mealybugs	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label
azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC) 4.5 EC (Neemazad)		2 1/2 to 5 tsp 1/2 tsp 1/8 to 1/4 tsp	40 to 80 fl oz 8 fl oz 2 1/4 to 4 1/2 fl oz	4 hours 4 hours 4 hours	
bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)		3/4 Tbsp	5 1/2 oz	See product label	Avoid excessive runoff.
bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)		1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)		1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
cyfluthrin -- PY 20 WP (Decathlon)		1/4 tsp	1.9 oz	See product label	

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Mealybugs, continued	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	dichlorvos -- OP 81 EC (Vapona) 5 A (Vapona)	— NA -- Smoke Generator	— NA -- Smoke Generator	See product label See product label	The 81 EC product is for use on African violets and begonias only. Vaporize 1 fl oz per 10,000 ft ³ . Ventilate thoroughly after two hours post application. See aphids section for comments on the 5 A product.
	fenpropathrin -- PY 30 EC (Tame)	² / ₃ tsp	10 ² / ₃ fl oz	See product label	See aphids section for comments.
	fluvalinate -- PY 22.3 F (Mavrik)	¹ / ₈ to ⁵ / ₈ tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	horticultural oil -- Other 98.8 EC (Ultra Fine, Sun Spray)	2 ¹ / ₂ to 5 Tbsp	1 to 2 gallons	4 hours	See aphids section for comments.
	imidacloprid -- Other 1 G (Marathon)	NA -- Granular	NA -- Granular	12 hours	See aphids section for comments.
	kinoprene -- IGR 65.1 EC (Enstar II)	¹ / ₂ to ² / ₃ tsp	5 to 10 fl oz	4 hours	
	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	See aphids section for comments.
	naled -- OP 58 EC (Dibrom)	NA -- Vaporized	NA -- Vaporized	24 hours	See aphids section for comments.
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	permethrin -- PY 36.8 EC (Astro)	¹ / ₄ to ¹ / ₂ tsp	4 to 8 fl oz	24 hours	See beet armyworm for comments.
	pyrethrins -- BO 6 EC (Pyreneone) 0.5 A (PT 1100 Pyrethrum)	¹ / ₈ to 1 ¹ / ₂ tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
	soap -- Other 49 EC (Insecticidal, M-Pede)	2 ¹ / ₂ fl oz	7 ¹ / ₂ qt	12 hours	See aphids section for comments.
	sulfotepp -- OP 15 A (Dithio, Plantfume 103)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.
Millipedes	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	See aphids section for comments.
Mites	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	See aphids section for comments.
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	dicofol -- CH 35 WP (Kelthane 35) 50 WP (Kelthane T/O)	1 ¹ / ₂ Tbsp 1 Tbsp	1 to 1 ¹ / ₃ lb ¹ / ₂ to 1 lb	12 hours 12 hours	

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Mites, continued	fenprothrin -- PY 30 EC (Tame)	1/2 to 1 tsp	10 2/3 fl oz	See product label	See aphids section for comments.
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
Moths	chlorpyrifos -- OP 22.5 EC (Dursban Pro)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
Plant Bugs	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
Scale Insects	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 3 EC (Azatin EC)	1/2 tsp	8 fl oz	4 hours	
	bifenthrin -- PY 0.5 A (PT 1800 Attain)	NA -- Aerosol	NA -- Aerosol	See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	Diazinon should not be applied directly to open blooms; it is not labeled for use on poinsettias.
	fenoxycarb -- IGR 25 WP (Precision) 0.6 A (PT 2100 Preclude)	1/2 tsp NA -- Aerosol	4 oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	horticultural oil -- Other 98.8 EC (Ultra Fine, Sun Spray)	2 1/2 to 5 Tbsp	1 to 2 gallons	4 hours	See aphids section for comments.
	kinoprene -- IGR 65.1 EC (Enstar II)	1/2 to 2/3 tsp	5 to 10 fl oz	4 hours	
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	1/8 to 1 1/2 tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	soap -- Other 49 EC (Insecticidal, M-Pede)	2 1/2 fl oz	7 1/2 qt	12 hours	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Shore Flies	fenoxycarb -- IGR 25 WP (Precision)	1/2 tsp	4 oz	See product label	
Slugs and Snails	metaldehyde -- Other 4 P (Deadline Bullets and Granules)	NA -- Pelleted bait	NA -- Pelleted bait	See product label	More than one application usually necessary. Follow label directions for application rates.
	5 P (Snarol)	NA -- Pelleted bait	NA -- Pelleted bait	See product label	
Sowbugs	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	lindane -- CH 25 WP (Lindane)	1 Tbsp	1 lb	See product label	Apply 1 gallon of spray per 150 ft ² . Repeat applications every 7 to 10 days may be required for effective control.
	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	See aphids section for comments.
	resmethrin -- PY 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	NA -- Aerosols	NA -- Aerosols	See product label See product label	See aphids section for comments.
Spider Mites	abamectin B ₁ -- Other 2 EC (Avid)	1/4 tsp	4 fl oz	See product label	Do not use on ferns or conifers.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	dichlorvos -- OP 5 A (Vapona)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.
	dicofol -- CH 35 WP (Kelthane 35) 50 WP (Kelthane T/O)	1 1/2 Tbsp 1 Tbsp	1 to 1 1/3 lb 1/2 to 1 lb	See product label See product label	
	dienochlor -- CH 50 WP (Pentac) 38 F (Pentac)	1 tsp 1/2 tsp	8 oz 8 fl oz	See product label See product label	Repeat pentac applications in 5 to 14 days for effective control.
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	horticultural oil -- Other 98.8 EC (Ultra Fine, Sun Spray)	2 1/2 to 5 Tbsp	1 to 2 gallons	4 hours	See aphids section for comments.
	naled -- OP 58 EC (Dibrom)	NA -- Vaporized	NA -- Vaporized	24 hours	See aphids section for comments.
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	soap -- Other 49 EC (Insecticidal, M-Pede)	2 1/2 fl oz	7 1/2 qt	12 hours	See aphids section for comments.
Spittlebugs	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Spittlebugs, continued	resmethrin -- PY 24.3 EC (Resmethrin)	1 tsp	1 pt	See product label	See aphids section for comments.
	soap -- Other 49 EC (Insecticidal, M-Pede)	2 ½ fl oz	7 ½ qt	12 hours	See aphids section for comments.
Silverleaf (Sweetpotato) Whitefly	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC)	5 tsp ¾ to 1 tsp	80 fl oz 10 to 16 fl oz	4 hours 4 hours	
	fenpropathrin -- PY 30 EC (Tame)	½ to 1 tsp	10 ⅔ fl oz	See product label	See aphids section for comments.
Thrips	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	⅓ to ⅔ lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 4.5 EC (Neemazad)	2 ½ to 5 tsp ⅛ to ¼ tsp	40 to 80 fl oz 2 ¼ to 4 ½ fl oz	4 hours 4 hours	
	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	See aphids section for comments.
	bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)	1 ½ tsp	12 to 20 oz	See product label	Avoid excessive runoff.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp ½ to 2 ½ tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	Apply aerosol using a rate of 1 lb per 1,500 to 3,000 ft². Treat as late in the day as possible. Building should be vented before reentry.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	½ to 1 Tbsp	1 ½ to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	¼ tsp	1.9 oz	See product label	
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	Diazinon should not be applied directly to open blooms; it is not labeled for use on poinsettias.
	fluvalinate -- PY 22.3 F (Mavrik)	⅛ to ⅝ tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	horticultural oil -- Other 98.8 EC (Ultra Fine, Sun Spray)	2 ½ to 5 Tbsp	1 to 2 gallons	4 hours	See aphids section for comments.
	lindane -- CH 25 WP (Lindane)	1 Tbsp	1 lb	See product label	Apply 1 gallon of spray per 150 ft². Repeat applications every 7 to 10 days may be required for effective control.
	malathion -- OP 25 WP (Malathion) 57 EC (Malathion)	2 tsp 2 tsp	40 oz 2 pt	See product label See product label	See aphids section for comments.
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	pyrethrins -- BO 6 EC (Pyrene)	⅛ to 1 ½ tsp	2 to 12 fl oz	See product label	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Thrips, continued	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label	See aphids section for comments.
	sulfotepp -- OP 15 A (Dithio, Plantfume 103)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.
Twospotted Spider Mite	fenpropathrin -- PY 30 EC (Tame)	1/2 to 1 tsp	10 2/3 fl oz	See product label	See aphids section for comments.
	fluvalinate -- PY 22.3 F (Mavrik)	1/8 to 5/8 tsp	2 to 10 fl oz	See product label	See aphids section for comments.
Western Flower Thrips	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental)	1 to 2 tsp	1/3 to 2/3 lb	See product label	See aphids section for comments.
	azadirachtin -- BO 3 EC (Azatin EC)	3/4 to 1 tsp	12 to 16 fl oz	4 hours	
	fomentate hydrochloride -- Other 92 SP (Carzol)	1 tsp	8 oz	24 hours	Local use registration in North Carolina.
Whiteflies	acephate -- OP 75 SP (Orthene Turf, Tree and Ornamental) 3 A (PT 300 TR Orthene & PT 1300 DS Orthene)	1 to 2 tsp NA -- Aerosols	1/3 to 2/3 lb NA -- Aerosols	See product label See product label	See aphids section for comments.
	azadirachtin -- BO 0.3 F (Margosan-O) 3 EC (Azatin EC) 4.5 EC (Neemazad)	2 1/2 to 5 tsp 1/2 tsp 1/8 to 1/4 tsp	40 to 80 fl oz 8 fl oz 2 1/4 to 4 1/2 fl oz	4 hours 4 hours 4 hours	
	<i>Beauveria bassiana</i> -- MI 7.16 EC (Naturalis-O)	2 tsp to 2 Tbsp	30 to 100 fl oz	4 hours	See aphids section for comments.
	bendiocarb -- CA 76 WP (Dycarb, Ficam, Turcam)	3/4 tsp	5 1/2 oz	See product label	See aphids section for comments.
	bifenthrin -- PY 10 WP (Talstar) 7.9 F (Talstar) 0.5 A (PT 1800 Attain)	1 to 5 tsp 1/2 to 2 1/2 tsp NA -- Aerosol	6.4 to 32 oz 2 to 10 fl oz NA -- Aerosol	See product label See product label See product label	See aphids section for comments.
	chlorpyrifos -- OP 20 ME (PT 1325 DuraGuard)	1/2 to 1 Tbsp	1 1/2 to 3 pt	12 hours	
	cyfluthrin -- PY 20 WP (Decathlon)	1/4 tsp	1.9 oz	See product label	
	diazinon -- OP 23 EC (Knox-Out)	1 to 2 Tbsp	3 to 6 pt	See product label	See aphids section for comments.
	dichlorvos -- OP 5 A (Vapona)	NA -- Smoke Generator	NA -- Smoke Generator	See product label See product label	See aphids section for comments.
	endosulfan -- CH 24.2 EC (Thiodan) 50 WP (Thiodan) 5 A (Thiodan)	2 tsp 1 Tbsp NA -- Smoke Generator	2 pt 1 lb NA -- Smoke Generator	24 hours 24 hours See product label	See aphids section for comments.
	fenoxycarb -- IGR 0.6 A (PT 2100 Preclude)	NA -- Aerosol	NA -- Aerosol	See product label	See aphids section for comments.

Insect or Related Pest	Pesticide, Classification, and Formulation†	Amount of Formulation per Gallon of Spray	Amount per 100 Gallons of Water	Minimum Interval Between Application	Precautions and Remarks
Whiteflies, continued	fenprothrin -- PY 30 EC (Tame)	$\frac{2}{3}$ tsp	10 $\frac{2}{3}$ fl oz	See product label	See aphids section for comments.
	fluvalinate -- PY 22.3 F (Mavrik)	$\frac{1}{8}$ to $\frac{5}{8}$ tsp	2 to 10 fl oz	See product label	See aphids section for comments.
	horticultural oil -- Other 98.8 EC (Ultra Fine, Sun Spray)	2 $\frac{1}{2}$ to 5 Tbsp	1 to 2 gallons	4 hours	See aphids section for comments.
	imidacloprid -- Other 1 G (Marathon)	NA -- Granular	NA -- Granular	12 hours	See aphids section for comments.
	kinoprene -- IGR 65.1 EC (Enstar II)	$\frac{1}{2}$ to $\frac{2}{3}$ tsp	5 to 10 fl oz	4 hours	
	naled -- OP 58 EC (Dibrom)	NA -- Vaporized	NA -- Vaporized	24 hours	See aphids section for comments.
	oxamyl -- CA 24 L (Vydate L) 10 G (Oxamyl)	2 to 4 tsp NA -- Granules	2 to 4 pt NA -- Granules	See product label See product label	See aphids section for comments.
	permethrin -- PY 36.8 EC (Astro)	$\frac{1}{4}$ to $\frac{1}{2}$ tsp	4 to 8 fl oz	24 hours	
	pyrethrins -- BO 6 EC (Pyrenone) 0.5 A (PT 1100 Pyrethrum)	$\frac{1}{8}$ to 1 $\frac{1}{2}$ tsp NA -- Aerosol	2 to 12 fl oz NA -- Aerosol	See product label See product label	See aphids section for comments.
	resmethrin -- PY 24.3 EC (Resmethrin) 1 A (PT 1200 TR Resmethrin & PT 1200 DS Resmethrin)	1 tsp NA -- Aerosols	1 pt NA -- Aerosols	See product label See product label See product label	See aphids section for comments.
	soap -- Other 49 EC (Insecticidal Soap, M-Pede)	2 $\frac{1}{2}$ fl oz	7 $\frac{1}{2}$ qt	12 hours	See aphids section for comments.
sulfotepp -- OP 15 A (Dithio, Plantfume 103)	NA -- Smoke Generator	NA -- Smoke Generator	See product label	See aphids section for comments.	

CALENDAR OF EVENTS

Event	Date	Time	Location and contacts
NCSU Poinsettia Open House	Wednesday 29 November	10:00 am to 3:00 pm	Horticulture Field Laboratory, Raleigh, N.C. Contact Roy Larson at 919-515-3133
GrowerExpo '96	Thursday–Monday 5–8 January 1996		Hyatt Regency O'Hare, Rosemont, Ill. Contact GrowerTalks at 800-456-5380 for further information
Green and Growin' Show	Thursday–Saturday 18–20 January 1996		Benton Convention Center, Winston-Salem, N.C. Contact Bill Wilder at 919-266-2137 for more information

NCCFGA NEWS

It seems as though a greenhouse grower marks his or her life with each crop that makes its way onto the benches. Poinsettias are over halfway through their growing cycle and geraniums are being panned for Spring. I sometimes feel like a time traveler. Christmas is half over and Spring is beginning, and it's only October! I am becoming comfortably numb to Christmas in November. Like robins in Spring, we are harbingers of each new season. We sometimes play Christmas carols in August while panning poinsettias. I'm not so amazed at Christmas decorations in the chains in early September.

Garden mums are basically over and pansies command center stage at most Carolina outlets. All said it was an average selling season for mums. Some markets flourished; some

languished. Prices were predictably low and unrealistic. The fall season is moving along with no special flurry, but sometimes just as good as last year's sales can be heartening.

Trends other than upsizing of greenhouse operations are getting harder to predict. I hope you are figuring out your place in our industry without too much worry. Don't be alarmed if you are not. You are part of the "new trend."

Happy Easter,

N.C. State Poinsettia Open House

Wednesday, 29 November 1995
Horticulture Research Laboratory
4301 Beryl Road
Raleigh, N.C.



- See 70 cultivars of poinsettias and how they perform under N.C. growing conditions.
- Observe how cultivars look when trained as poinsettia "wreaths."
- Enjoy world-class complimentary refreshments.
- Don't let this opportunity pass you by; you can't afford to miss it!!!
- Call Roy Larson at 919-515-1196 for further information.



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

DOUGLAS A. BAILEY, EDITOR
DEPARTMENT OF HORTICULTURAL SCIENCE
NORTH CAROLINA STATE UNIVERSITY
BOX 7609
RALEIGH, NC 27695-7609
(919) 515-1195 FAX (919) 515-7747
INTERNET: doug_bailey@ncsu.edu

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