RESEARCH RESULTS FOR ORNAMENTAL HORTICULTURISTS

August 1976
Horticulture Series No. 24
Auburn University
Agricultural Experiment Station
R. Dennis Rouse, Director Auburn, Alabama

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Florist Crops

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CONTENTS

The Use of Floral Arrangements in Alabama Funeral Homes

Alan Cotton and Kenneth C. Sanderson

Nature of Work:

A survey of 100 Alabama funeral homes was conducted to determine: (1) If the funeral home personnel believed that flowers help comfort the family, (2) to what extent funeral home directors suggest a particular florist to the family, (3) if any restrictions are placed on floral offerings accepted at the funeral home and what these restrictions are, (4) what type of floral arrangements are preferred in the funeral home, (5) in the opinion of the funeral home personnel, what type of flowers hold up best, (6) what complaints funeral homes have against flowers, (7) what trend the directors see in the omission of flowers and if the omission of flowers hurts their business and (8) if the funeral homes believe they have a good working relationship with the florists of their city. Seventy-five funeral homes replied to the questionnaire.

Results and Discussion:

(1) All of the funeral home directors believe that flowers do help comfort the family.

(2) Only 12 percent of the funeral home directors said they recommend a particular florist; 88 percent do not.

(3) Ninety percent of the funeral home directors do not place restrictions on types of floral offerings accepted. Ten percent of the directors place restrictions on size, quality of flowers, appropriateness and construction of the arrangements.

(4) The funeral home directors favored floral designs as follows: Sprays (72 percent), specialty pieces (17 percent), baskets (6 percent), potted plants (4 percent) and vase arrangements (1 percent).

(5) Almost 75 percent of the directors stated that carnations remain fresh for the longest period of time in their funeral homes; chrysanthemums (13 percent), gladiolus (8 percent) and roses (2 percent) are listed next as long-lasting flowers.

(6) Arrangements or designs leaking water is the major complaint of the funeral home directors against florists. Failure to deliver on time, poor quality of flowers, poor design in arrangements, lack of variety in flowers, and steel picks cutting employees hands are ranked next, in order. One funeral home director thinks flowers are a waste of money and that too many flowers are carried to the funeral home.

(7) Twenty-nine percent of funeral home directors replied that the trend of omitting flowers at funerals is increasing; 60 percent of the funeral home directors said the trend is constant and 11 percent stated that the omission of flowers is decreasing. Most Alabama funeral home directors (72 percent) believe the omission of flowers does not hurt their business.

(8) Almost all of the funeral home directors (96 percent) reported they have a good working relationship with the florists of their city; only 4 percent stated they do not.

Publications:

The use of floral arrangements in Alabama funeral homes. Florists' Rev. 156:17, 65-71.

Effect of Growth Retardant Treatments on the Height of Rieger Elatior Begonias cv. Schwabenland Red

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Schwabenland Red Reiger begonias were obtained from a commercial source and potted into 6-inch clay pots containing a soil, sphagnum peat moss, perlite (1:6:3, v/v/v) medium on March 15. This medium was amended prior to transplanting with 56.7 g of Osmocote 14-14-14 fertilizer per bushel. Every 2 weeks, the plants were fertilized with 20-20-20 fertilizer at the rate of 227 g per 100 gal. All plants were drenched with a fungicide mixture of 21 ml of Truban 25 Ec and 60 g Benelate WP per 39 gallons immediately after transplanting. Sprays of Kocide 101 (2 lb. per 100 gallons) were alternated weekly with sprays of Daconil 2787 (2 lb. per 100 gal.) to control foliar diseases. For the first 2 weeks of growth, the plants were lighted with 10 ft-c of incandescent light for 1 hour each night. Plants were grown under shaded conditions (2,000 ft-c) at 70^{o} F. Watering was done with a Chapin automatic watering system to prevent disease problems. The growth retardant treatments shown in Table 1 were applied to 10 plants per treatment on April 16. Drenches, consisting of 150 ml of material, were applied directly to the medium surface. A Halaby mist blower was used to apply the sprays. Data on height were obtained on May 13.

Results and Conclusions:

All growth retardant treatments reduced plant height, however, a drench of 2 p.p.m. ancymidol caused the greatest height reduction. All ancymidol treatments were more effective than chlormequat drenches, the currently suggested height control treatment for Rieger begonias. Flowering of plants treated with ethephon was delayed and perhaps even reduced.

Table 1. Effect of Growth Retardant Treatments on Rieger Elatior Begonias cv. Schwabenland Red

Treatments	Height (cm)
Untreated	30.6
1,500 ppm chlormequat drench	22.8
1,000 ppm chlormequat drench	26.4
200 ppm ethephon drench	27.4
100 ppm ethephon drench	25.1
2 ppm ancymidol drench	16.3
1 ppm ancymidol drench	21.0
66 ppm ancymidol spray	20.6
2,000 ppm ethephon spray	19.5
2,500 ppm SADH plus 2,500 ppm chlormequat spray	22.8

Publications: None

Effect of Various Experimental Chemical Pinching Agents on the Height of Flowering of Potted Chrysanthemums

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Two experiments were conducted to determine the effects of 3 new experimental, chemical pinching agents on potted chrydanthemums. Exp. 1 considered 2 Armak chemicals, TD 6773 MO and TD 6528. Exp. 2 considered Uniroyal's UB1-P273 in addition to the Armak compounds. Sunny Mandalay chrysanthemums were grown under normal cultural conditions for potted chrysanthemums. In Exp. 1, five unrooted cuttings were directly rooted under mist into a 6-inch pot on February 14. Photocontrol for Exp. 1 plants consisted of lighting them at night for 4 hours from February 14 to March 5, and covering them with black cloth from 4:30p.m.to 7:30 each day from March 5 until the flowers showed color. Plants for Exp. 2 were propagated on February 28, lighted February 28 to March 18 and blackclothed from March 18 until show of flower color. A 1:1:1 medium of soil, sphagnum peat moss, and perlite was amended with 75 g limestone, 50 g superphosphate and 50 g of gypsum prior to use as the cultural medium. Plants were fertilized weekly with 20-20-20 at the rate of 2 lb. per 100 gal.

Pinching treatments were applied when the shoots were judged appropriate for pinching (approximately 2 weeks after sticking the cuttings). A Halaby mist blower was used to apply a minimum amount of chemical material or until the leaves glistened. No surfactant was added to any of the treatments (some chemicals contained one). Each experiment was replicated twice. Data on height and the number of flowers per plant were recorded at flowering.

Results and Conclusions:

Successful pinching of potted chrysanthemums was obtained with sprays of 1.50% TD 6773MO in Exps. 1 and 2 and 0.50% UN1-P293 in Exp. 2 (Table 1). Further testing of these chemicals is warranted. All chemical treatments reduced plant height in Exp. 1. With the exception of TD 6773MO, all the Armak chemicals increased plant height in Exp. 2. Uniroyal's UB1-P293 caused a slight reduction in plant height in Exp. 2. Armak's TD 6528 at concentrations of 0.05% to 0.40% drastically reduced the number of flowers per plant and appeared to be phytotoxic on plants at these concentrations (plants showed distortion and burn on the margin of leaves).

Publications: None

Table 1. Effect of Experimental Chemical Pinching Agents on Growth of Chrysanthemums

Treatment[z]	Height (cm)	No. of Flowers per Plant
Experiment 1		
Soft hand pinch	30.6	5.0
0.75% TD 6770MO	29.3	4.6
1.50% TD 6773MO	29.0	5.8
0.15% TD 6528	27.7	4.0
0.30% TD 6528	26.3	3.2
0.40% TD 6528	26.5	2.5
Experiment 2		
Soft hand pinch	25.6	5.2
0.75T TD 6773MO	27.8	3.6
1.50% TD 6773MO	25.1	5.0
0.05% TD 6528	29.6	1.6
0.10% TD 6528	27.3	3.3
0.15% TD 6528	27.6	4.4
0.50% UB1-P293	24.5	5.2
1.00% UB1-P293	23.9	3.9

[z] Each treatment was applied to 40 plants in Exp. 1 and 32 plants in Exp. 2, respectively.

An Evaluation of ACR 1158D as a Growth Retardant on Chrysanthemums, cvs. Sunny Mandalay and Orange Bowl

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Three experiments were conducted from April 29, 1975 to August 18, 1975 in evaluating a new growth retardant, ACR 1158D, manufactured by Hoffman-LaRoche. Exps. 1 and 2 utilized the chrysanthemum cultivar Sunny Mandalay whereas Orange Bowl was the test cultivar in Exp. 3 Six-inch pots of 5 plants each were treated 2 weeks after pinching (when the breaks were 3-4 cm long) with the following treatments: none, 5,000 ppm SADH, 50 ppm ACR 1158D, 100 ppm ACR 1158D and 150 ppm ACR 1158D. Plants were sprayed with a fine mist until incipient runoff. Treatments of 30 pots each were replicated 4 times. Normal greenhouse culture for potted chrysanthemum was used: liquid fertilization, photocontrol for flowering and a 62° F. minimum night growing temperature. At flowering the height and number of flowers per plant were recorded.

Results and Discussion:

All growth retardants reduced height, however a 5,000 ppm SADH spray yielded the shortest plant (Table 1). Sprays of 150 ppm ACR 1158D were more effective in reducing plant height than lower concentrations. Higher concentrations of ACR 1158D should be investigated but in Exps. 2 and 3, plants sprayed with 150 ppm ACR 1158D visually did not appear to be taller than plants sprayed with 5,000 ppm SADH. In general, growth retardant treatment increased the number of flowers per plant (Table 1). In all experiments, plants sprayed with 150 ppm ACR 1158D had more flowers per plant than untreated plants.

Table 1. Height and Number of Flowers per Plant of Potted Chrysanthemums Treated with Growth Retardants

Treatment	Exp. 1	Exp. 2	Exp. 3	Mean
Height:				
Check	32.2	26.9	35.7	31.6
5,000 ppm SADH	26.5	26.2	26.1	26.3
50 ppm ACR1158D . . .	32.1	27.8	32.8	30.9
100 ppm ACR1158D . . .	30.5	27.3	29.3	29.0
150 ppm ACR1158D . . .	30.0	26.6	27.7	28.1
Number of Flowers:				
Check	5.0	3.6	3.2	3.9
5,000 ppm SADH	5.0	4.3	3.0	4.1
50 ppm ACR1158D	4.9	4.0	3.3	4.1
100 ppm ACR1158D	4.9	4.0	3.3	4.1
150 ppm ACR1158D	5.2	4.0	3.2	4.1

Publications: None

Effect of Ancymidol (A-Rest) on Growth and Flowering of Seed Propagated Geraniums

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Ancymidol is reported to retard plant height and stimulate flowering in seedling geraniums. In 2 experiments the material was applied to seedlings at the 2-4 true leaf stage using the following concentrations: 0, 0.41 mg per sq. ft. 0.63 mg per sq. ft., 0.85 mg per sq. ft., and 1.10 mg per sq. ft. A spray volume of 0.9 ml per plant was used in applying the sprays.

Exp. 1 was conducted from April 26 to July 10, 1974. Seedlings of Carefree Scarlet, Carefree Bright Pink, Carefree White and Sprinter were propagated in peat pellets (Jiffy-7's) on April 26, transplanted to a 1:1:1 (v/v/v) soil, sphagnum peat moss and perlite medium on May 28 and treated on June 10. The seedlings were potted in a Ranco fiber pot which may have influenced the result. The experiment was repeated in the spring of 1975 using Carefree Scarlet seedlings propagated in Jiffy Mix. Three types of pots were used: clay, fiber,and plastic.

Results and Conclusions:

The retardant action of ancymidol has been reported to be interferred with by pine bark media. Results of the 1974 experiment showed very little difference in plant height. Ancymidol plants flowered earlier with little differences were observed in plant height in the 1975 experiment. Despite the fact that the 1974 experiment utilized a wood product pot, it does not seem to be the cause of retardant failure. Plants in both experiments were sprayed during hot weather and high temperature has been reported to inactivate another retardant (SADH). Other causes of inactivation which should be investigated are type of sprayer, spray coverage, timing of spray, time on plant, humidity, and plant age.

Publications: None

Effect of Watering Methods on Growth of Potted Chrysanthemum cvs. Nob Hill and Yellow Nob Hill

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Watering methods have been reported to influence the growth of potted chrysanthemums. An experiment conducted in 1975 considered hand watering, Chapin EV-2"spaghetti" watering, and Vattex mat (capillary) watering. Rooted cuttings of the chrysanthemum cultivars Nob Hill and Yellow Nob Hill were transplanted to clay pots containing a 1:1:1 soil, sphagnum peat moss and perlite medium on February 19, 1975. Normal cultural practices for the flowering of single stem potted chrysanthemums were followed. All plants were sprayed with 5,000 ppm SADH (B-Nine) on March 12 and March 26. Data on plant dry weight were collected at flowering on May 7.

Results and Conclusions:

The plants did not appear to differ in plant height. The 2 applications of SADH probably were responsible for height control. Dry weights of plants were as follows:

	Nob Hill	Yellow Nob Hill	Mean
Hand Watering	4.9	4.5	4.7
Vattex Mat	5.4	6.3	5.9
Chapin Tube	5.2	5.1	5.2

The automatic watering systems produced plants with increased dry weight Capillary watering by a Vattex Mat yielded plants with the most dry weight.

Publications: None

An Evaluation of Four New Chemical Pinching Agents on Azaleas

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Azaleas are usually pinched or sheared to induce branching. Recently, a chemical pinching agent, Off-shoot-O has been introduced that effectively pinches the azalea by killing the top of the plant. Occassionally, plant damage will occur with Off-shoot-O if plants are overtreated or in a succulent condition. Cultivar response to Off-shoot-O also varies. Several new materials have been tested as pinching agents on various plants. PBA or Shell's Accel^TM and Uniroyal's UNI-P293 for chrysanthemum and chloroflurenol Maintain CF 125, Maleic hydrazide, and ethyl hydrogen 1-propylphosphonate or Niagara 102637 for wood ornamentals. The present investigation considers 4 new experimental chemicals, Hoffman-LaRoche's Atrinal^TM and Armak's TD 6528, TD 6772MO and TD 6596 were investigated in Exp. 1 and Atrinal^TM was compared with shearing and Off-shoot-O in Exp. 2.

In Exp. 1, established liners of Kingfisher azaleas were treated on January 14 as shown in Table 1. Plants were sprayed until run-off with a Halaby mist blower. No surfactant was used in formulating sprays. Sheared plants were sheared according to commercial practices. The number of shoots per plant was determined on 3 plants per treatment and 4 replications on April 15, 1975.

For Exp. 2, liners of the azalea cultivars Alaska, Gloria, Red Gish, Red Ruffles were potted on March 31, sheared on July 3 and treated on July 10. A low pressure, high volume hand sprayer (ASL Killaspray) was used to apply 4 concentrations of Atrinal^TM and Off-shoot-O^R at the concentration shown in Table 2. Approximately 110 ml of spray were used to treat 60 plants in a 65.2 sq. ft. area. Sprayed to visible leaf coverage, an estimated 18.3 ml of material was applied to each plant. Shoot number per plant was determined during October 3 through October 10.

Results and Conclusions:

None of the chemical treatments produced as many shoots as shearing in Exp. 1 (Table 1). All chemical treatments yielded plants with more shoots than untreated plants. Atrinal^TM at 4,000 ppm produced plants with the most shoots in Exp. 2. All Atrinal-treated plants had more shoots than plants sprayed with Off-shoot-O^R. Generally, all cultivars gave a similar response to treatment. Red Gish and Alaska plants produced comparable shoot numbers at 3,000 ppm Atrinal^TM as at 6,000 ppm Atrinal^TM.

Table 1. Number of Shoots per Plant on Azalea cv. Kingfisher Treated with Various Experimental Pinching Agents

Treatments	Number of Shoots per Plant
Check, no treatment	41.8
Sheared	65.4
1,000 ppm Atrinal[TM]	42.0
2,000 ppm Atrinal[TM]	48.4
3,000 ppm Atrinal[TM]	50.4
4,000 ppm Atrinal[TM]	51.8
5,800 ppm TD6528	54.2
8,700 ppm TD 6528	57.3
20,000 ppm TD6773MO	48.8
40,000 ppm TD6773MO	51.9
10,000 ppm TD6596	53.2

Table 2. Comparision of Shearing, Atrinal and Off-Shoot-O Sprays on the Number of Shoots per Plant of Four Azalea Cultivars

Treatment	Cultivars				Mean
	Alaska	Gloria	Red Gish	Red Ruffles	
Sheared	102.8	110.4	125.1	65.3	100.9
3,000 Atrinal[TM]	129.1	140.4	180.0	97.2	129.7
4,000 Atrinal[TM]	125.7	166.7	202.6	117.1	152.0
5,000 Atrinal[TM]	136.4	172.0	199.0	117.1	156.1
6,000 Atrinal[TM]	135.6	161.5	192.1	107.2	149.1
Off-Shoot-O[R]	108.0	135.2	155.9	82.0	120.3

Publications:

Sanderson, K. C. and W. C. Martin, Jr. 1976. Effect of dikegulac as a shoot inducing agent on azaleas. Abstract 1976 Meeting of Plant Growth Regulator Working Group. Baton Rouge, La. p. 4

_____ and ______. 1976. Effect of Atrinal[TM] as a post-shearing treatment on shoot number and flowering of azaleas. Proc. So. Nurserymen's Assoc. Res. Cofr. 21st. Report. (Submitted for publication).

_____ and _____. 1976. Dikegulac - a new chemical pinching agent for woody ornamentals. Highlights of Agric. Res. Vol. 23, No. 3 (In Press).

Effect of Growth Retardants on *Clerodendron thomasoniae* Balf.

Kenneth C. Sanderson and Willis C. Martin, Jr.

Nature of Work:

Clerodendron thomasoiae Balf. is a tropical, twining, evergreen shrub frequently found in conservatories and greenhouses throughout the South. Its genus name is derived from the Greek kleros meaning chance and dendron meaning tree. Natives believed that the tree was chance cure for certain ailments. *C. thomasoniae* is one of 100 or more species in the Verbenaceae family. Common names for the plant include glorybower, white bleedingheart, bleedingheart glorybower, bleedingheart, bagflower, Cornell flower, glory-vine, baf-flower, Southern bleedingheart.

For many years *C. thomasoniae* has been grown as a pot plant in Europe. In Norway approximately 75,000 plants are grown for Mother's day sales. It can also be grown in hanging baskets, on trellises and arbors, or as a trained specimen plant in tubs. Major production problems are control of height and flowering. Pinching has been recommended in the past to compact growth, induce branching, and stimulate flowering. Chlormequat and α-cylopropyl-α-cylopropyl-α-methoxypropyl-5-pyrimidine methanol (ancymidol) have been reported to show promise as growth retardans on *C. thomasoniae* however confusion exists on chemical effectiveness, methods of application and rate of application. Auburn research compared these two retardants on plants propagated from one node cuttings (2 cuttings per 12.5 cm pot) on July 1, 1974. Plants were grown in steam pasteurized, 1:1:1 soil, sphagnum peat moss, and perlite medium which was amended prior to planting with 0.6 kg $CaNO_3$, 1.1 kg 20 superphosphate, 0.2 kg FTE, .03 kg $FeSO_4$, and 1.6 kg Osmocote™ 3 "14-14-14" (14.0 N-6.2p-11.6) per m^3. Following transplanting, plants were fertilized each week with liquid fertilizer (20.0N-8.8P-16.8K) at the rate of 2.4 g per liter. Plants were grown in a lightly shaded greenhouse equipped with fan and pad cooling. Plants were soft pinched on July 29 and August 2. Ancymidol and chloromequat treatments were applied to the plants on August 26. Method of application and rates were determined from preliminary tests and previous research (12). Drenches were applied directly to the medium and sprays were applied to the plants with a Halaby mistblower until the leaves glistened (Table 1). A randomized block design consisting of 3 replications, 6 treatments, 4 pots per treatment and 2 plants per pot was used. Plant height was recorded on the plants on September 30.

Results and Discussion:

Ancymidol drenches (0.3 or 0.6 mg per 13.5 cm pot or sprays (1.9 to 3.8 mg per plant were more effective in reducing plant height and overcoming the vining habit than 450 mg chloromequat drenches (Table 1). The combination of 450 mg of chlormequat with 0.3 mg of ancymidol did not increase the effectiveness of a drench in retarding Clerodendron height.

Publications:

Sanderson, K. C. and W. C. Martin, Jr. 1975. Cultural concepts for growing *Clerondendron thomasoniae* Balf. as a pot plant. *Fla. State Hort. Soc. Proc.* 88: 439-441.

Sanderson, K. C. and W. C. Martin, Jr. 1976. *Clerodendron thomasoniae* southern bleeding heart tropical vine to pot plant. Highlights of Agri. Res. Auburn Univ. Ala. Agri. Exp. Station 23(2)16.

Table 1. Effect of growth retardant treatments on height of *Clerodendron thomasoniae* Balf.

Treatment	Rate mg	Height cm [z]
Untreated plants		85.7 a
Sprays per plant		
Ancymidol	1.9-3.8	29.3 c
Drenches per 12.5 cm pot		
Ancymidol	0.3	30.0 c
Ancymidol	0.6	26.4 c
Ancymidol plus chlormequat. . .	0.3 plus 450	25.6 c
Chlormequat	450	54.5 b

[z] Mean separation, in columns, by Duncan's multiple range test at 5% level.