RESEARCH RESULTS FOR FLOWER GROWERS
POINSETTIA STUDIES 1966-67

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RESEARCH RESULTS FOR FLOWER GROWER[1]
POINSETTIA STUDIES 1966 - 67[2]

I. INFLUENCE OF SEVERAL MEDIA ON THE GROWTH AND KEEPING QUALITY OF POINSETTIA, CV 'PAUL MIKKELSEN'.

On September 21, 1966, cuttings of the poinsettia cultivar 'Paul Mikkelsen' were "stuck" under mist for direct rooting in 12 media. Prior to sticking, the bases of cuttings were dipped in a combination fungicide and root inducing compound consisting of 50% Ferbam and 50% Hormodin No.2. Five cuttings were placed in a 6-in. pot. The media were: (1) soil and peat; (2) soil and bagasse (Bet-R-Growth, a sugar cane by-product provided by the McCarthey Co.); (3) soil, peat and perlite; (4) soil, peat and bagasse; (5) sand and peat; (6) sand and bagasse; (7) vermiculite and peat; (8) vermiculite and bagasse; (9) calcined clay ("Sorbolite", a baked clay product furnished by Clay Products Co., Bradenton, Fla.); (1) calcined clay and bagasse; (11) calcined clay, vermiculite and peat; (12) calcined clay, vermiculite and bagasse. Lime requirements were determined for each mixture and limestone added accordingly. Other fertilization consisted of 2 lb. of superphosphate and 6 lb. of 8-8-8 per cu. yd. Following rooting, the plants were fertilized on a weekly basis with 20-20-20 at the rate of 1 oz. per 4 gal. of water.

All plants were grown single stem in a greenhouse at 60° F. On December 16, 1966, two pots of each media treatment were placed in a room at 65-70° F. The plants received light from windows and incandescent lamps for approximately 9 hours each day. Keeping quality records, consisting of percentage of foliage retained and bract condition, were taken on January 31, 1967.

The various media mixtures did not exert any influence on the date of the flowering, December 16, 1966. The tallest plants were grown in media mixtures of soil and peat and soil, peat and perlite, Table 1. Mixtures of soil and bagasse sand and peat produced the shortest plants. The media combination of soil, perlite and peat or bagasse produced taller plants than the other combinations, Table 2. Plants grown in peat-amended mixtures (8.6 in.) were taller than plants grown in bagasse-amended mixtures (8.1).

After 47 days under home keeping conditions, plants grown in soil and peat and soil and bagasse mixtures had the highest percentage of foliage intact. The media combination of calcined clay and the amendments had the poorest foliage retention. Peat-and-bagasse-amended mixtures had essentially the same percentage of foliage remaining (32% vs. 30%). Bract condition was best in plants grown in sand and bagasse, Table 13. The bracts of plants grown in bagasse-amended mixtures were in better condition than the bracts of plants grown in peat-amended mixtures, Table 2.

1/ For more detailed information on specific questions, contact the authors at Department of Horticulture, Funchess Hall, Auburn University, Auburn, Alabama 36830. Note: Trade names of materials appearing in this report do not imply endorsement by Auburn University Agricultural Experiment Station.

2/ Cuttings utilized in poinsettia research were propagated from stock plants donoted by Paul Ecke Poinsettias, Encinitas, California.

Table 1. The Influence of Media on the Mean Height, Foliage Retention and Bract Condition of Poinsettia cv. 'Paul Mikkelsen'

Media [1]	Keeping quality [2]		
	Height above pot rim	Foliage retention	Bract condition
	In.	%	
Soil and peat	9.7	70	Poor, shedding
Soil and bagasse	6.9	60	Fair, starting to shed
Soil, perlite and peat	9.6	40	Fair-poor, starting to shed
Soil, perlite and bagasse	9.0	40	Poor, starting to shed
Sand and peat	7.1	10	Poor, shedding
Sand and bagasse	8.1	25	Good-poor, some shedding
Vermiculite and peat	7.1	30	Poor, shedding
Vermiculite and bagasse	7.9	35	Fair-poor, starting to shed
Calcined clay and peat	9.2	15	Poor, shedding
Calcined clay and bagasse	8.3	10	Poor, shedding
Calcined clay, vermiculite and peat	9.0	25	Poor, shedding
Calcined clay, vermiculite and bagasse	8.1	20	Poor, shedding
Mean	8.3	31.7	

1/ Equal portions of materials were used in all media. Limed according to test, each medium contained 2 lb. of superphosphate and 6 lb. of 8-8-8 per cu. yd.

2/ Keeping quality determinations made 47 days after flowering.

Table 2. Influence of Media Combination on the Mean Height and Keeping Quality of Poinsettia cv. 'Paul Mikkelsen'

Media [1]	Keeping quality [2]		
	Height above pot rim	Foliage retention	Bract condition
	In.	%	
Soil and amendment	8.3	65	Fair - poor
Soil, perlite and amendment	9.3	40	Fair - poor
Sand and amendment	7.6	18	Good - poor
Vermiculite and amendment	7.5	33	Fair - poor
Calcined clay and amendment	8.8	13	Poor
Calcined clay, vermiculite and amendment	8.6	23	Poor
Mean	8.4	32	----------

1/ Equal portions of materials were used in all media. Amendment was either peat or bagasse (mean represents plants grown in both). Limed according to test, each medium contained 2 lb. superphosphate and 6 lb. 8-8-8 per cu. yd.

2/ Keeping quality determinations were made 47 days after flowering.

II. EFFECT OF VARIOUS GROWTH RETARDANT TREATMENTS ON SEVERAL POINSETTIA CULTIVARS.

Cuttings of poinsettia cultivars 'Elisabeth Ecke', 'Snowcap', 'Snowflake', 'Stoplight' and 'White Cloud' were direct rooted under mist in a soil mixture consisting of equal parts of soil, peat, and perlite. The cuttings were stuck on September 20, 1966. Three cuttings were placed in a 6-in. pot. A combination fungicide-root inducing powder consisting of 50% Ferbam and 50% Hormodin No. 2 was applied to the base of all cuttings prior to "sticking". Following rooting, the plants were grown single stem at 60° F. in full sun and fertilized each week with 20-20-20 at the rate of 1 oz. per 4 gal. of water.

Growth retardant treatments were started on October 24, 1966. The treatments were: (1) drench, 0.3% cycocel 60 ml per pot (Amer. Cyanamid Company's registered trademark for (2-chloroethyl) trimethylamonium chloride); (2) drench, 0.3% cycocel plus a spray of 0.5% B-Nine (Uniroyal Company's registered trademark for N-dimethylamino succinamic acid); (3) spray, 0.25% cycocel combined with 1.0% B-Nine; (4) spray, 1.0% B-Nine; (5) spray, 0.5% B-Nine; (6) spray, 0.25% cycocel; (7) spray, 0.25% cycocel in 25% Green-Glo (a foliar material manufactured by the Green-Glo Co., Waco, Texas); (8) spray, 0.25% followed one week later by a spray, 0.25% B-Nine; (9) spray, 1.0% B-Nine in 25% Green-Glo; (10) check.

The flowering date, height above the pot rim and bract diameter was determined for each plant. Data was collected on six plants of each variety.

The growth retardant treatments resulted in less than 1 to 4 days delay in the date of flowering for each of the poinsettia cultivars, Table 3. The mean flowering date for various retardant treatments differed from the check by 1-2 days. The United States Department of Agriculture cultivars 'Snowcap', 'Snowflake', 'Stoplight', and 'White Cloud' flowered 7-19 days later than 'Elisabeth Ecke', 'Ecke White' and 'Paul Mikkelsen'. 'White Cloud' was the last cultivar to flower, December 17. 'Paul Mikkelsen' flowered first, November 29.

Table 3. Effect of Various Growth Retardant Treatments on the Mean Date of Flowering of Several Poinsettia Cultivars

Treatment 1/	Cultivars 2/							
	E E	E W	P M	S C	S F	S L	W C	Mean
Drench, 0.3% Cycocel	11/30	11/29	11/29	12/9	12/7	12/6	12/17	12/4
Drench, 0.3% Cycocel spray; 0.5% B-Nine	11/29	11/29	11/29	12/9	12/7	12/7	12/17	12/5
Spray, 0.25% Cycocel & 1.0% B-Nine	12/1	12/1	11/29	12/8	12/7	12/7	12/17	12/6
Spray, 1.0% B-Nine	12/1	11/29	11/30	12/9	12/7	12/7	12/17	12/6
Spray, 0.5% B-Nine	11/30	11/29	11/29	12/9	12/9	12/7	12/15	12/6
Spray, 0.25% Cycocel	12/1	11/29	11/29	12/9	12/8	12/8	12/15	12/5
Spray, 0.25% Cycocel in 25% Green-Glo	11/30	11/30	11/29	12/9	12/8	12/7	12/18	12/5
Spray, 0.25% Cycocel spray, 0.25% B-Nine	12/1	11/29	11/30	12/9	12/8	12/7	12/17	12/6
Spray, 1.0% B-Nine in 25% Green-Glo	12/1	11/30	11/29	12/10	12/9	12/7	12/18	12/6
Check	12/1	11/30	11/29	12/8	12/7	12/7	12/14	12/5
Mean	12/1	11/30	11/29	12/9	12/8	12/7	12/17	12/5

1/ Plants propagated on Sept. 20, 1966. All treatments applied Oct. 24, 1966 with the exception of the 0.25% B-Nine spray in treatment 8 which was applied Oct. 31, 1966.

2/ Cultivars abbreviated as follows: E E: 'Elisabeth Ecke', E W: 'Ecke White', P M: 'Paul Mikkelsen', S C: 'Snowcap', S F: 'Snowflake', S L: 'Stoplight', W C: 'White Cloud'.

The mean height of the plant was greatest with the plants receiving a 0.5% B-Nine spray, Table 5. The shortest height means occurred with plants receiving a 0.25% B-Nine spray in 25% Green-Glo, a 0.25% cycocel spray plus a 0.25% B-Nine spray one week later and a combination spray of 0.25% cycocel and 1.0% B-Nine. The treatment that gave the greatest height reduction over the check was the 1.0% B-Nine in 25% Green-Glo. The cultivars differed in their response to the treatments with no one treatment causing a maximum height reduction in all or a number of cultivars. 'Elisabeth Ecke' produced the shortest plants. 'White Cloud' had tallest mean height.

Table 4. Effect of Various Growth Retardant Treatments on the Mean Plant Height (Inches) Above the Pot Rim of Several Poinsettia Cultivars

Treatment 1/	Cultivars 2/							
	E E	E W	P M	S C	S F	S L	W C	Mean
Drench, 0.3% Cycocel	12.0	17.5	15.5	15.6	14.0	19.1	16.3	15.7
Drench, 0.3% Cycocel spray, 0.5% B-Nine.	12.8	18.5	13.3	14.6	13.3	16.6	16.1	15.0
Spray, 0.25% Cycocel & 1.0% B-Nine	13.1	16.6	13.6	14.6	13.5	15.6	13.3	14.3
Spray, 1.0% B-Nine	13.3	17.0	17.5	17.0	11.5	17.1	16.1	15.6
Spray, 0.5% B-Nine	14.6	19.6	18.0	14.5	14.1	16.6	19.5	16.7
Spray, 0.25% Cycocel	10.3	17.5	15.0	15.8	11.6	17.0	16.6	14.8
Spray, 0.25% Cycocel in 25% Green-Glo.	11.1	18.6	18.3	14.3	12.3	17.6	15.5	15.4
Spray, 0.25% Cycocel spray, 0.25% B-Nine.	9.8	15.8	13.6	15.5	12.3	16.3	16.0	14.2
Spray, 1.0% B-Nine in 25% Green-Glo	10.3	17.1	13.6	12.6	11.0	16.5	16.1	13.9
Check	14.1	10.1	13.1	16.8	14.0	17.6	18.3	16.0
Mean	12.1	17.6	15.2	15.1	12.7	17.0	16.4	15.1

1/ Plants propagated on Sept. 20, 1966. All treatments applied Oct. 24, 1966 with the exception of the 0.25% B-Nine spray in treatment 8 which was applied Oct. 31, 1966.

2/ Cultivars abbreviated as follows: E E: 'Elisabeth Ecke', E W: 'Ecke White', P M: 'Paul Mikkelsen', S C: 'Snowcap', S F: 'Snowflake', S L: 'Stoplight', W C: 'White Cloud'.

The application of growth retardants reduced the size of the bract, Table 5. The smallest mean bract diameter (10.2 in.) was recorded for plants receiving the 0.25% cycocel spray in 25% Green-Glo. The check (untreated) had a mean bract diameter of 12.9 in. The combination spray of 0.25% cycocel and 1.0% B-Nine caused the most bract diameter reduction in the cultivars 'Ecke White', Paul Mikkelsen' and 'Stoplight'. The bract size of 'Snowflake' and 'White Cloud' was most reduced by the 0.25% cycocel spray plus the 0.25% B-Nine spray one week later and the 0.25% B-Nine spray in 25% Green-Glo. The bract diameter of 'Snowcap' suffered the most reduction when treated with a spray of 0.25% cycocel and 0.25% cycocel in 25% Green-Glo. The 0.25% cycocel spray followed by the 0.25% B-Nine

spray one week later caused greatest reduction in bract diameter in the cultivar 'Elisabeth Ecke'. 'Elisabeth Ecke' and 'Snowcap' had the greatest mean bract diameter. 'Snowflake' had the smallest mean bract diameter.

Table 5. Effect of Various Growth Retardant Treatments on the Bract Diameter (Inches) of Several Poinsettia Cultivars

Treatment 1/	Cultivars 2/ E E	E W	P M	S C	S F	S L	W C	Mean
Drench, 0.3% Cycocel . . .	13.0	12.5	11.6	13.5	10.5	12.8	10.3	12.0
Drench, 0.3% Cycocel spray, 0.5% B-Nine . . .	14.0	11.5	12.5	13.1	10.5	12.5	11.3	12.2
Spray, 0.25% Cycocel & 1.0% B-Nine	12.8	9.0	11.1	11.8	10.0	10.5	10.6	10.8
Spray, 1.0% B-Nine	13.5	12.1	12.8	13.1	10.5	12.3	11.1	12.2
Spray, 0.5% B-Nine	13.8	9.6	12.3	13.1	10.3	12.6	12.0	12.0
Spray, 0.25% Cycocel . . .	12.3	11.3	12.5	12.0	10.1	11.5	11.5	11.6
Spray, 0.25% Cycocel in 25% Green-Glo	13.0	9.5	12.5	12.1	11.3	12.8	10.3	10.2
Spray, 0.25% Cycocel spray, 0.25% B-Nine . . .	12.0	10.3	11.6	13.0	9.6	11.6	9.6	11.1
Spray, 1.0% B-Nine in 25% Green-Glo	13.0	10.3	12.0	12.8	9.6	12.8	10.1	11.5
Check	13.1	12.6	12.0	14.5	12.3	13.0	12.5	12.9
Mean	13.1	10.9	12.1	13.0	10.5	12.2	11.0	11.8

1/ Plants propagated on Sept. 20, 1966. All treatments applied with the exception of the 0.25% B-Nine spray in treatment 8 which was applied Oct. 31, 1966.

2/ Cultivars abbreviated as follows: E E: 'Elisabeth Ecke', E W: 'Ecke White', P M: 'Paul Mikkelsen', S C: 'Snowcap', S F: 'Snowflake', S L: 'Stoplight', W C: 'White Cloud'.

III. SCHEDULED PRODUCTION OF THE POINSETTIA CULTIVARS, 'ECKE WHITE' AND 'PAUL MIKKELSEN' UNDER NATURAL FLOWERING CONDITIONS.

Cuttings of the poinsettia cultivars 'Ecke White' and 'Paul Mikkelsen' were rooted under mist on various propagation dates as shown in Table 6. All pinched plants and the 10-in. single stem plants were propagated in peat pots. The 10-in. pots were panned on October 17, 1966, and the 8-in. and 6-in. pots on September 9, 1966. The remaining single stem plants were rooted directly in the pots. A 1:1:1 soil, peat and perlite soil mixture was used in rooting and growing the plants. All cuttings, except those taken in October were treated with a mixture of 50% Hormodin No. 2 and 50% Ferbam. Hormodin No. 3 was used on the October cuttings. Four pots of each cultivar were propagated on each date. Upon callusing the plants were fertilizer with 25-10-10 at the rate of 1 oz. per 4 gal. each week. All plants were flowered naturally.

Table 6 shows the number of flowers, height and flowering dates of the plants on various propagation schedules. 'Ecke White' had a mean number of flowers per pinched plant of 2.9. The mean number of flowers per pinched plant for 'Paul

Mikkelsen' was 2.6. With the exception of the last two propagation dates for 'Paul Mikkelsen'; the height of the plants was within the expected range predicted by the originator of this schedule, Shanks of Maryland. Late propagation dates produced shorter plants than early propagation dates. Further experimentation on scheduling is warrented to determine the influence of lighting to delay flowering and the influence of the lighting on the height of the plants.

Table 6. Scheduled Production of the Poinsettia Cultivars, 'Ecke White' and 'Paul Mikkelsen'

Propagation date 1/	Number of cuttings	Pot size (in.)	Pinch date 2/	Number of flowers	Height above rim (in.)	Flowering date
'Ecke White'						
8/5/66	8	10	9/5/66	22.5	16.0	12/7/66
8/15/66	8	10	SS	8.0	17.2	12/7/66
8/15/66	6	8	9/15/66	17.0	15.2	12/11/66
8/19/66	4	8	9/20/66	10.7	16.0	12/7/66
8/25/66	3	6	9/25/66	11.0	13.0	12/9/66
9/1/66	6	8	SS	6.0	16.0	12/7/66
9/9/66	5	6	SS	5.0	10.7	12/14/66
9/20/66	4	6	SS	4.0	9.0	12/22/66
10/10/66	1	4	SS	1.0	8.4	12/17/66
'Paul Mikkelsen'						
8/5/66	8	10	9/5/66	19.7	17.7	12/12/66
8/15/66	8	10	SS	8.0	16.5	12/12/66
8/15/66	6	8	9/15/66	14.7	14.0	12/9/66
8/19/66	4	8	9/20/66	12.5	15.0	12/9/66
8/25/66	3	6	9/25/66	8.5	12.2	12/12/66
9/1/66	6	8	SS	6.0	17.5	12/7/66
9/9/66	5	6	SS	5.0	11.0	12/16/66
9/20/66	4	6	SS	4.0	6.2	12/22/66
10/10/66	1	4	SS	1.0	7.0	12/22/66

1/ All pinched and the 10-in. single stem plants were propagated in peat pots and later panned.

2/ Plants were grown both pinched and single stem (SS) and flowered naturally without growth retardants.

IV. INFLUENCE OF CYCOCEL DRENCHES AND B-NINE SPRAYS APPLIED AT VARIOUS TIMES ON HEIGHT, STEM LENGTH AND BRACT HEAD DIAMETER OF POINSETTIA.

Cuttings of the poinsettia cultivars 'Paul Mikkelsen' and 'Elisabeth Ecke' were propagated in sand under mist on July 24, 1966. A combination root-inducing substance and fungicide was applied to all cuttings before sticking. The rooted cuttings were potted on August 19, 1966 in a 1:1:1 soil, peat, and perlite medium using 3 cuttings per 6-in. pot. All plants were pinched on September 8, 1966 and growth retardant treatments were started. Growth retardant treatments consisted of a check, cycocel drenches (1 qt. per 10 gal. with 6 oz. of solution applied to a 6-in. pot) and B-Nine sprays (0.5% to 1.0% concentrations) applied on various dates as shown in Table 7. Three pots (9 plants) of each cultivar were used per treatment.

Two applications of a cycocel drench applied September 8 and October 6 and a single cycocel drench applied September 22 produced plants with the shortest mean height, Table 7. The two cycocel drenches applied September 8 and October 6 yielded the shortest plants for 'Paul Mikkelsen'. 'Elisabeth Ecke' had the shortest plants when the plants received a single cycocel drench on September 22 or two applications of cycocel on September 22 and October 20. The mean height of the cycocel treated plants was less than the mean height of the B-Nine treated plants.

Table 7. Influence of Cycocel Drenches and B-Nine Sprays Applied at Various Times on the Mean Height of Poinsettia, cv. 'Paul Mikkelsen' and cv. 'Elisabeth Ecke'

Treatment 1/	Height (in.) above pot rim		
	Paul Mikkelsen	Elisabeth Ecke	Mean
Check	12.0	17.2	14.6
Cycocel drench, Sept. 8	8.8	14.3	11.6
Cycocel drench, Sept. 8 and Oct. 6	10.3	13.0	11.7
Cycocel drench, Sept. 22	11.8	15.6	13.7
Cycocel drench, Sept. 22 and Oct. 20	11.8	12.8	12.3
Cycocel drench, Oct. 6	14.5	14.1	14.3
B-Nine, 1.0% spray Sept. 22	15.7	15.4	15.6
B-Nine, 0.5% spray Sept. 22 and Oct. 6	19.7	15.3	17.5
B-Nine, 0.5% spray, Oct. 6 and Oct. 20	17.6	16.4	17.0
Mean	14.0	14.8	14.4

1/ Cuttings propagated July 24, 1966. Cycocel applied at the rate of 6 oz. of a 3000 p.p.m. solution per 6-in. pot.

The length of the stem above the pinch was most effectively reduced by two applications of a cycocel drench applied on September 8 and October 6 or on September 22 and October 20, Table 8. The two earlier timed applications (September 8 and October 6) were most effective on cv. 'Paul Mikkelsen'. A single cycocel drench on September 8, and two drenches (one on September 22 and the second on October 22) caused the greatest reduction in stem length in the cultivar 'Elisabeth Ecke'. Cycocel treated plants (7.1) had shorter stems above the pinch than B-Nine treated plants (9.1).

Table 8. Influence of Cycocel Drenches and B-Nine Sprays Applied at Various Times on the Mean Length of Stem Above the Pinch in Poinsettia, cv. 'Paul Mikkelsen and cv. 'Elisabeth Ecke'

Treatment 1/	Stem Length above pinch		
	Paul Mikkelsen	Elisabeth Ecke	Mean
Check	10.7	7.5	9.1
Cycocel drench, Sept. 8	8.8	5.0	7.9
Cycocel drench, Sept. 8 and Oct. 6	7.1	5.9	6.5
Cycocel drench, Sept. 22	7.9	6.2	7.1
Cycocel drench, Sept. 22 and Oct. 20	8.1	5.0	6.6
Cycocel drench, Oct. 6	8.3	6.2	7.3
B-Nine, 1.0% spray Sept. 22	10.3	7.4	8.9
B-Nine, 0.5% spray Sept. 6 and Oct. 6	9.1	8.6	8.9
B-Nine, 1.0% spray, Oct. 6	9.4	9.2	9.3
B-Nine, 0.5% spray Oct. 6 and Oct. 20	10.2	8.0	9.1
Mean	9.0	6.9	8.0

1/ Cuttings propagated July 24, 1966. Cycocel applied at the rate of 6 oz. of 1000 p.p.m. solution per 6-in. pot.

The single cycocel drench applied on September 8 produced plants with the smallest mean bract head diameter, Table 9. The check or no treatment had a mean bract head diameter comparable to the most severe growth retardant treatment. A cycocel drench on September 22 plus a second drench on October 22 caused the greatest reduction in bract head diameter in cv. 'Elisabeth Ecke'. Cycocel treated plants had a smaller mean bract head diameter (7.8 in.) than B-Nine treated plants (8.4 in.).

Table 9. Influence of Cycocel Drenches and B-Nine Sprays Applied at Various Times on the Mean Bract Head Diameter of Poinsettia cv. 'Paul Mikkelsen' and cv. 'Elisabeth Ecke'

Treatments 1/	Bract head diameter (in.)		
	Paul Mikkelsen	Elisabeth Ecke	Mean
Check	6.7	9.0	7.9
Cycocel drench, Sept. 8	7.0	7.6	7.3
Cycocel drench, Sept. 7 and Oct. 6	7.6	8.3	8.0
Cycocel drench, Sept. 22	6.6	9.6	8.1
Cycocel drench, Sept. 22 and Oct. 20	8.3	6.9	7.6
Cycocel drench, Oct. 6	7.0	8.9	8.0
B-Nine 1.0% spray, Sept. 22	7.1	9.6	8.4
B-Nine 0.5% spray, Sept. 22 and Oct. 6	7.1	9.7	8.4
B-Nine 1.0% spray, Oct. 6	6.7	10.7	8.7
B-Nine 0.5% spray, Oct. 6 and Oct. 20	6.7	9.1	7.9
Mean	7.1	8.9	8.0

1/ Cutting propagated July 24, 1966. Cycocel applied at the rate of 6 oz. of a 3000 p.p.m. solution per 6-in. pot.

V. AN EVALUATION OF FIVE NEW POINSETTIA CULTIVARS.

Five new poinsettia cultivars, developed by Yoder Brothers, Barberton, Ohio, were evaluated in 1967. The cultivars were Coronado, Flamenco, Franciso, Eldorado and Rolando. The developer classed them as undisseminated seedlings which if proven worthy would be patented or protected prior to dissemination to the commercial trade. At present, these cultivars have not been released to the commercial trade.

The cultivars were received from Barberton, Ohio as 2¼-in. pot plants. The plants were potted (3 plants per 6-in. pot) in a sterile soil mixture consisting of equal parts of soil, peat and perlite. Prior to potting, the pH of the mixture was adjusted to 6.0 according to test and superphosphate (2 lb. per cu. yd.) added.

A single application of Terrachlor and 3 drenches of Dexon were used on the plants for preventive disease control. Fertilization consisted of bi-monthly applications of 25-10-10 at the rate of 1 oz. per 4 gal. of water. All the cultivars except Coronado were evaluated as both pinched and single stem plants. Coronado was not recommended for single stem culture. The culture schedule for the evaluation was as follows:

	Pot	Pinch	Lighting-period
Pinched crop	Sept. 14	Sept. 21	Sept. 14 - Oct. 5
Single stem	Sept. 29	------	Sept. 29 - Oct. 5

The mean plant height, bract diameter, flowering date and weeks of short day response were recorded for each cultivar.

The results of the evaluation are presented in Table 10.

Table 10. Mean Plant Height, Bract Diameter, Flowering Date and Weeks of Short Day Response of Yoder Poinsettia Cultivars Grown Pinched and Single Stem

Cultivar	Height (in.)	Bract diameter (in.)	Flowering date	Weeks short days
Pinched plants				
Coronado	12.0	9.9	12/20/67	10.9
Eldorado	14.2	12.6	12/18/67	10.6
Flamenco	12.7	10.3	12/20/67	10.6
Francisco	9.5	10.4	12/18/67	10.6
Rolando	13.8	12.6	12/18/67	10.6
Single stem plants				
Coronado	Not grown			
Eldorado	14.9	12.9	12/31/67	11.0
Flamenco	12.7	9.3	12/20/67	10.9
Francisco	11.3	11.9	12/20/67	10.9
Rolando	12.8	13.3	12/18/67	10.9

Coronado produced a rather stocky, sturdy pinched plant (mean height 12.0 in.). The mean number of breaks per plant was 3.2. The foliage was medium size, dark green and positioned high up on the bracts. Bract color, an intense scarlet red, was comparable or superior to existing cultivars. The color was brighter than the color of Paul Mikkelsen or Elisabeth Ecke. The bract was medium sized and sinuated like the leaf. Bracts were not well positioned for maximum display. Many of the bracts were twisted or held at angles. Coronado required 10.9 weeks of short days for a flowering response.

Eldorado produced relatively tall plants both when grown pinched and single stem, Table 10. Foliage was large, deeply notched, medium to dark green and slightly curled or sinuated in form. Elorado seemed to perform better when grown single stem than when grown pinched. The mean number of breaks per plant when pinched was 2.9. Plant growth was quite uniform under both single stem and pinched culture. Bract size was large, approaching that of Barbara Ecke Supreme. Elorado had an interesting bract form with the bracts having a semi-formal, bi-lateral development with a sinuated or ruffled appearance. Bract color was a brilliant orange-red, a Santa Claus red. Lower bracts had a glazed appearance. Splitting of the bracts was minimal or non-existant. This cultivar's short day response was 10.6 weeks for pinched plants and 11.0 weeks for single stem plants. Eldorado was the most promising red cultivar evaluated.

Flamenco averaged 12.7 inches in height under both pinched and single stem culture. The mean number of breaks on pinched plants was 3.5. Stems were strong. Pinched and single stem plants had uniform growth and were comparable in quality. The bracts were a bright rose pink color. This color was a new pink which is not found in current pink cultivars and was considered superior to that existing in currently available pink cultivars. Bract diameters were 10.3 in. for pinched plants and 9.3 in. for single stem plants. The horizontal displacement of the bracts gave a maximum display. Foliage was dark green and of good substance. The short day response of Flamenco was 10.6 weeks for pinched plants and 10.9 weeks for single stem plants.

Franciso produced the shortest plants of the cultivars tested, Table 10. Single stem plantswere superior to pinched plants. The mean number of breaks per plant was high (3.6), however, the shoots developing from the pinch were thin and spindly. The bracts were an intense scarlet-red. Such a color intensity is not found in current commercial cultivars. The bract form was uniformally ruffled and resembled that of Stoplight. Bract displacement was not good. Many of the bracts were turned or twisted thus not uniformly or completely displayed. Plants flowered in 10.6 weeks when grown pinched and 10.9 weeks when grown single stem.

Rolando introduced a color that was different from existing cultivars. The color was not a pink and not red and can be described as a rose red. Bract size was large and wide. The form of the bracts was semi-informal. Leaf and bract shape was not desirable. Rolando seemed to be more subject to splitting than the other cultivars tested. Plants were tall, leggy and not compact (long internodes with few leaves). The average number of breaks per pinched plant was 2.9. Both pinched and single stem plants had a short day response of 10.6 weeks. Growth was erratic with plants being of various heights under both cultures.

VI. INFLUENCE OF VARIOUS ROOT INDUCING SUBSTANCES ON THE ROOTING OF POINSETTIA CV. ELISABETH ECKE CUTTINGS.

Cuttings of the poinsettia cultivar Elisabeth Ecke, a difficult to root cultivar, were subjected to the root inducing treatments shown in Table 11. The cuttings were taken from field grown stock plants on August 23, 1967. The root inducing substances were applied to the base of the cuttings as powders and 5-second liquid dips. Rooting was done in sand and under mist. Five cuttings per treatment and five replications were used. Approximately one month after treatment the rooting percentage and score were recorded. Rooting scores were based on: 0 = no rooting, dead; 1 = no rooting, alive; 2 = callused; 3 = light rooting; 4 = medium rooting; 5 = heavy rooting.

Cuttings treated with a mixture of Hormodin No. 2 and Ferbam, and 20 p.p.m. indolebutryic acid and 50 p.p.m. boric acid had the highest rooting percentages, Table 11. Dips of O-chloro phenoxy acetic acid, 2,4,5 trichloro phenoxy acetic acid and a mixture of indolebutryic, naphalene acetic, 2,4,5 trichlorpropionic and boric acids also had high rooting percentages. The former two materials have previously yielded similar results with azaleas. Cuttings treated with a mixture of Hormodin No. 2 and Ferbam had the highest mean rooting score. It is felt that the results obtained with this mixture may be partially attributed to its fungicidal action.

Table 11. Influence of Various Root Inducing Substances on the Mean Rooting, Percentage of Poinsettia cv. Elisabeth Ecke Cuttings

Treatments 1/	Per cent rooted	Rooting score 2/
Hormodin No. 1	47	2.1
Hormodin No. 2	13	1.0
Hormodin No. 3	20	1.6
Hormodin No. 2 and Ferbam, 1:1	87	3.7
Indole butryic acid (IBA) 20 p.p.m.	27	1.3
Indole acetic acid (IAA) 20 p.p.m.	40	1.5
O-chlorophenoxy acetic acid, 20 p.p.m.	80	2.8
P-chlorophenoxy acetic acid, 20 p.p.m.	67	2.7
Indole propionic acid, 20 p.p.m.	53	2.2
2,4,5 Trichlorophenoxy acetic acid (2,4,5-T) 20 p.p.m.	73	2.6
2,4,5 Trichlorphenoxy propionic acid (2,4,5-TP) 20 p.p.m.	53	2.2
2,4 Dichlorphenoxy acid (2,4 D) 20 p.p.m.	53	2.5
Naphalene acetic acid (NAA) 20 p.p.m.	67	3.1
A-naphlene acetamid, 20 p.p.m.	53	2.6
Beta naphoxyacetic acid, 20 p.p.m.	60	2.9
IBA, 20 p.p.m. and Boric acid, 50 p.p.m.	87	2.9
Gibberellic acid, 100 p.p.m.	60	2.5
B-(2 Furyl-acrylic acid) 20 p.p.m.	60	2.7
IBA, 10 p.p.m; NAA; 10 p.p.m; 2,4,5, TP, 10 p.p.m. and Boric Acid 50 p.p.m.	73	2.8
O-Chlorophenoxy AA, 10 p.p.m. and NAA, 10 p.p.m.	67	2.7

1/ Hormodin materials were applied to the base of the cuttings as powders. (Hormodins are products of Mercke and Co., Rahway, N. J. Active ingredient is indole butryic acid). Other root inducing substances were applied by dipping the cutting base in liquids for 5 seconds.

2/ Rooting scores are based on: 0 = no rooting, dead; 1 = no rooting, alive; 2 = callused; 3 = light rooting; 4 = medium rooting and 5 = heavy rooting.

VII. CUTTING PRODUCTION COMPARISONS OF FIELD GROWN 2-1/4-IN. AND NO. 1 SIZE STOCK PLANTS OF FOUR POINSETTIA CULTIVARS.

The cutting production of 2-1/4-in. vegetative and No. 1 dormant stock plants was compared under field culture in 1967. Four cultivars of poinsettia were used: Barbara Ecke Supreme, Ecke White, Elisabeth Ecke and Paul Mikkelsen. The 2-1/4-in. plants were received on April 7, potted into 4-in. peat pots and lighted with incadescent lights from 10 p.m. to 2 a.m. until planting in the field on May 19. The 2-1/4-in. plants were spaced in the field so as to allow 6.6 sq. ft. per plant. Dormant No. 1 stock plants were planted in the field on April 12 so as to allow 13.2 sq. ft. per plant. Fertilization during the growing season consisted of applications of 8-8-8, at the rate 3 lb. per 100 sq. ft. every 3 weeks until September 1. The first application was applied on May 19 and the second on June 8. The plants were pinched as needed until July 8. Cutting production records were taken on August 15, 21, 23, and 28; September 25 and October 16.

Table 12 shows the mean number of cuttings per plant produced by dormant No. 1 stock was approximately twice that of 2-1/4-in. vegetative stock. A cultivar response was noted with dormant No. 1 stock plants of cv. Ecke White and cv. Elisabeth Ecke producing more than twice as many cuttings as 2-1/4 in. vegetative stock. The cultivar Paul Mikkelsen had the smallest differences in cutting production with the mean number of cuttings per plant being 98.4 and 76.3 for No. 1 dormant and 2-1/4-in. vegetative stock, respectively.

The cutting production of the 2-1/4-in. vegetative stock was more evenly distributed over the first four harvest dates than the No. 1 dormant stock, Table 13. Both types of stock plants produced almost 50% or more of their cuttings after September 25. Cutting production of cv. Barbara Ecke Supreme and cv. Paul Mikkelsen stock plants was better distributed than that of 'Ecke White' and 'Elisabeth Ecke' stock plants.

Table 12. Mean Number of Cuttings Produced per Plant by 2-1/4-in. and No. 1 Stock Plants of Four Poinsettia Cultivars 1/

Cultivar	Stock plant size		
	2-1/4 in.	No. 1	Mean
Barbara Ecke Supreme	55.3	109.6	82.5
Ecke White	77.1	187.6	132.4
Elisabeth Ecke	44.4	121.0	82.7
Paul Mikkelsen	76.3	98.4	87.4
Mean	63.3	129.2	96.3

1/ The 2-1/4-in. plants were potted on April 7, 1967 and held in the greenhouse until field planting on May 19, 1967. The No. 1 plants were received as dormant stock plants and were planted in the field on April 12, 1967.

Table 13. Percentage of Cutting Production Harvested on Various Dates from 2-1/4-Inch and No. 1 Stock Plants of Four Poinsettia Cultivars 1/

Date	Cultivar				
	Barbara Ecke Supreme	Ecke White	Elisabeth Ecke	Paul Mikkelsen	Mean
2-1/4-Inch stock plants					
August 15	15	0	0	14	7
August 21	0	0	46	21	17
August 28	22	39	0	6	17
September 25	28	0	0	20	12
October 5	35	61	54	39	47
No. 1 stock plants					
August 15	19	0	0	15	9
August 21	17	18	47	17	25
August 28	8	26	0	6	10
September 25	8	0	0	9	4
October 5	48	56	53	53	52

1/ The 2-1/4-inch plants were potted on April 7, 1967 and held in the greenhouse until field planting on May 19, 1967. The No. 1 plants were received as dormant stock and were planted in the field on April 12, 1967.

VIII. EFFECT OF PROPAGATION DATE, PINCHING AND LIGHTING ON THE GROWTH OF SIX POINSETTIA CULTIVARS.

Cuttings of the poinsettia cultivars 'Barbara Ecke Supreme', 'Elisabeth Ecke', 'Ecke White', 'Indianapolis Red', 'Paul Mikkelsen' and 'White Cloud' were direct rooted in a 1:1:1 soil, peat and perlite mixture under mist. The production schedule is presented in Table 14. Both single stem and pinched culture were used. Pot size and the number of cuttings per pot were reduced as the schedule proceeded. Plants were flowered under natural daylength and natural daylength plus 4 hours of light in the middle of the night (10 p.m. to 2 a.m.). Lighting was done from September 15 to October 5. Fertilization consisted of 3 lb. of 25-10-10 per 100 gal. applied every two weeks. Data was recorded on plant height, number of flowers per pinched plant and bract size of single stem plants.

Early propagated plants were taller than late propagated plants, Table 14. The mean height of the plant was greatest (24.5 in.) when propagated August 5 (pinched and lighted) and August 15 (single stem and lighted). 'Indianapolis Red' had the tallest cultivar mean height (29.3 in.) when propagated August 15 (single stem and lighted).

Single stem plants (15.3 in.) were shorter than pinched plants (17.4 in.) but one must attribute part of the difference to propagation date. Pinching produced the tallest plants with 'White Cloud' (18.5 in.) and the shortest plants with 'Elisabeth Ecke' (15.0 in.). 'Ecke White' (17.2 in.) and 'Elisabeth Ecke' (11.0 in.) were tallest and shortest cultivar - single stem culture combinations.

Lighting plants in the middle of the night increased plant height. The mean height for lighted plants and natural day plants was 17.0 in. and 13.7 in. respectively. 'Ecke White' (19.2 in.) produced the tallestlighted plant and 'Elisabeth Ecke' (10.2 in.) produced the shortest natural light plants.

In the experiment, 'Elisabeth Ecke' (12.3 in.) had the shortest mean height and 'Ecke White' (17.0 in.) had the tallest mean height.

Table 14. Influence of Propagation Date, Pinching and Lighting on the Mean Height (in.) of Six Poinsettia Cultivars

Schedule 1/			Cultivars 2/						
Date	Pinch	Light	RES	EE	EW	IR	PM	WC	Mean
8/5	9/5	No	24.0	17.0	24.0	22.0	21.0	24.0	22.0
8/5	9/5	Yes	26.5	22.5	25.5	27.0	20.0	26.0	24.5
8/15	9/5	No	15.0	12.0	19.0	18.0	18.0	17.0	16.5
8/15	9/5	Yes	18.0	20.5	22.5	20.0	17.5	17.5	19.3
8/15	No	No	18.8	10.4	20.3	16.5	16.1	17.1	16.5
8/15	No	Yes	24.4	22.2	28.3	29.3	21.2	21.3	24.5
8/20	9/20	No	13.3	12.6	13.3	17.3	13.3	16.0	14.3
8/20	9/20	Yes	15.3	14.7	19.0	19.7	19.3	18.7	17.8
8/25	9/25	No	11.3	8.2	10.3	10.3	9.3	11.7	10.2
8/25	9/25	Yes	14.7	12.3	17.7	13.0	13.3	17.1	14.7
9/1	No	No	17.3	13.8	16.6	13.1	15.2	18.5	15.8
9/1	No	Yes	20.4	16.0	20.8	17.4	16.1	21.3	18.7
9/10	No	No	12.6	3.9	12.0	13.0	12.6	11.2	10.0
9/10	No	Yes	15.4	4.4	18.2	14.9	15.6	18.1	14.4
9/20	No	No	10.9	8.0	8.9	10.0	14.8	11.0	10.6
9/20	No	Yes	12.7	9.6	12.3	10.4	12.0	12.2	11.5
9/30	No	No	8.4	6.0	8.6	7.5	6.5	9.6	7.8
9/30	No	Yes	8.8	8.0	8.4	5.6	8.1	8.7	8.0
Mean			16.0	12.3	17.0	16.0	15.1	16.5	15.5

1/ Plants were pot size and cuttings per pot varied with propagation date: 8/5: 10 in. (10), 8/15: 8 in. (6), 8/20: 7 in. (4) and 8/25: 6 in. (3).

2/ Cultivars abbreviated as follows: RES: 'Barbara Ecke Supreme', EE: 'Elisabeth Ecke', EW: 'Ecke White', IR: 'Indianapolis Red', PM: 'Paul Mikkelsen' and WC: 'White Cloud'.

The propagation date did not seem to influence the number of flowers per plant on pinched plants, Table 15. Naturally flowered plants averaged 3.0 flowers per pinch whereas plants receiving supplementary lighting averaged 2.9 flowers per pinch. Considering the cultivars, the highest (3.1) and lowest (2.8) mean number of flowers per pinch were produced by 'Indianapolis Red' and 'Paul Mikkelsen' respectively. Plants of 'Indianapolis Red' and 'White Cloud' grown on natural daylength had the highest (3.2) mean number of flowers per plant of any cultivar-light combinations. The least number (2.7) of flowers per plant were produced by 'Barbara Ecke Supreme' and 'Paul Mikkelsen' grown on natural daylength. Several combinations of propagation date, lighting and cultivars produced 3.6 flowers per plant, Table 15.

The mean bract diameter of early propagated plants and late propagated plants differed very little, Table 16.

Table 15. Influence of Propagation Date, Pinching and Lighting on the Mean Number of Flowers per Plant of Six Poinsettia Cultivars Grown Pinched

Schedule 1/			Cultivars						
Prop.	Pinch.	Light	BES	EE	EW	IR	PM	WC	Mean
8/5	9/5	No	2.9	3.5	2.8	3.2	2.2	2.9	2.9
8/5	9/5	Yes	3.1	2.9	2.9	3.5	3.6	3.0	3.2
8/15	9/5	No	3.5	2.8	2.8	3.2	2.5	2.7	2.9
8/15	9/5	Yes	1.9	3.0	3.0	2.8	2.7	2.8	2.7
8/20	9/20	No	3.3	2.2	3.1	3.4	2.6	3.2	3.0
8/20	9/20	Yes	3.2	2.3	2.9	3.2	2.5	2.6	2.8
8/25	9/25	No	2.8	2.8	3.4	2.8	3.3	3.6	3.1
8/25	9/25	Yes	2.7	3.6	3.2	2.8	2.9	2.9	3.0
Mean			2.9	2.9	3.0	3.1	2.8	3.0	3.0

1/ Plants were propagated under mist directly in finishing pot. Pot size varied with propagation date: 8/5: 10 in. (10), 8/15: 8 in. (6), 8/20: 7 in (4) and 8/25: 6 in. (3). Incadescent lighting was done in the middle of the night (10 p.m. to 2 a.m.) from September 15 to October 15.

2/ Cultivars abbreviated as follows: BES: 'Barbara Ecke Supreme', EE: 'Elisabeth Ecke', EW: 'Ecke White', IR: 'Indianapolis Red', PM: 'Paul Mikkelsen' and WC: 'White Cloud'.

Supplementary lighting increased bract diameter. The bract diameters of natural daylength and natural daylength plus supplementary lighting were 11.4 in. and 11.8 in. respectively. 'Barbara Ecke Supreme' (13.3 in.) had the largest bract diameter and 'White Cloud' (9.8 in.) had the smallest diameter. Lighting produced the largest bract diameter in 'Barbara Ecke Supreme' (13.9 in.) and the smallest bract diameter in 'White Cloud' (9.7 in.). The largest mean bract diameter for natural daylength plants was with 'Barbara Ecke Supreme' (12.8 in.) and the smallest with 'Paul Mikkelsen (10.0 in.) and 'White Cloud' (10.0 in.). A combination of early propagation, supplementary lighting and 'Elisabeth Ecke' produced a bract diameter of 15.7 in.

Table 16. Influence of Propagation Date, Pinching and Lighting on the Mean Bract Diameter (inches) of Six Poinsettia Cultivars Grown Single Stem

Schedule 1/		Cultivars 2/						
Prop.	Light	BES	EE	EW	IR	PM	WC	Mean
8/15	No	12.4	8.5	14.3	12.1	11.5	9.1	11.3
8/15	Yes	15.6	15.7	11.9	13.4	8.1	9.3	12.3
9/1	No	14.0	13.8	13.6	13.5	12.6	11.9	13.2
9/1	Yes	14.4	13.1	12.1	14.5	9.8	11.0	12.5
9/10	No	12.8	5.5	12.6	11.3	10.5	11.1	10.6
9/10	Yes	12.5	7.4	13.2	12.1	9.8	9.6	10.8
9/20	No	12.1	12.0	11.0	10.8	10.6	8.8	10.9
9/20	Yes	14.0	14.4	12.5	12.7	11.3	8.9	12.3
9/30	No	12.6	12.7	10.8	11.9	10.0	8.9	11.2
9/30	Yes	12.9	13.1	12.6	8.1	11.1	9.7	11.3
Mean		13.3	11.6	12.5	12.4	10.5	9.8	11.6

1/ Plants were propagated under mist directly in finishing pot. Pot size and cuttings per pot varied with propagation date: 8/5: 10 in. (10), 8/15: 8 in. (6), 8/20: 7 in. (4) and 8/25: 6 in. (3).

2/ Cultivars abbreviated as follows: BES: 'Barbara Ecke Supreme', EE: 'Elisabeth Ecke', EW: 'Ecke White', IR: Indianapolis Red', PM: 'Paul Mikkelsen' and WC: 'White Cloud'.

IX. INFLUENCE OF PROPAGATION DATE AND GROWTH RETARDANT TREATMENT ON THE HEIGHT AND BRACT DIAMETER OF POINSETTIAS, CV. BARBARA ECKE SUPREME AND CV. PAUL MIKKELSEN.

Four groups of poinsettia cuttings, 'Barbara Ecke Supreme' and 'Paul Mikkelsen' were propagated directly into 6-in. pots on three different dates: August 14, August 28 (2 groups) and September 25. Propagation media consisted of 1:1:1 soil, peat and perlite. All cuttings were treated with a 1:1 mixture of Hormodin No. 2 and Ferbam. Rooting was carried out under mist in a lightly shaded greenhouse.

Following rooting, the plants were fertilized every two weeks with 25-10-10 at the rate of 1 oz. per 4 gal. of water. Approximately one month after propagation, the plants were treated with growth retardants. Treatments for the first two propagation groups (August 14 and August 28) were as follows: (1) check; no treatment; (2) single spray of 1.0% B-Nine (N-dimethyl amino succinamic acid); (3) two sprays of 0.25% cycocel (2-chloroethyl trimethylammonium chloride) applied one week apart; (4) combination spray of 0.5% B-Nine and 0.25% cycocel; (5) single drench of 0.25% cycocel. The remaining propagation groups (August 28 and September 25) were treated as follows: (1) check, no treatment; (2) single spray of 0.5% B-Nine; (3) single spray of 0.25% cycocel; (4) combination spray of 0.25% B-Nine and 0.15% cycocel; (5) single drench of 0.15% cycocel.

The experiment consist of 2 cultivars, 4 propagation groups, 4 replications and 5 treatments with 3 pots (4 cuttings per pot) per treatment. Data consisted of the height of plant above the pot rim and bract diameter.

The mean height of the plants from the various propagation dates ranged from 7.5 in. (September 25) to 11.6 in. (August 14).

The greatest mean height occurred for both cultivars with the August 14 propagation date, Table 17. Both cultivars produced the shortest mean height when propagated on September 25. The mean bract diameter ranged from 10.9 in. (September 25) to 12.3 in. (August 28, second group), Table 18. The greatest and smallest mean diameter for the two cultivars respectively were: 13.5 in. (August 28, second group) and 11.3 in. (September 25) for 'Barbara Ecke Supreme' and 11.0 in. (August 28, second group) and 10.4 in. (August 14) for 'Paul Mikkelsen'.

Table 17. Influence of Propagation Date and Growth Retardant Treatment on the Height (in.) of Poinsettias cv. 'Barbara Ecke Supreme' and cv. 'Paul Mikkelsen'

Retardant treatments	Cultivar		Mean
	BES	PM	
Propagated 8/14/67			
Check	15.8	13.3	14.6
1.0% B-Nine spray 9/14/67	12.5	12.3	12.4
0.25% Cycocel spray 9/14/67 and 9/21/67	9.0	10.7	9.9
0.5% B-Nine and 0.25% Cycocel spray 9/14/67	11.0	11.1	11.1
0.25% Cycocel drench 9/14/67	10.1	10.3	10.2
Mean	11.7	11.5	11.6
Propagated 8/28/67			
Check	12.4	10.5	11.5
1.0% B-Nine spray 10/3/67	10.5	8.2	9.4
0.25% Cycocel spray 10/3/67 & 10/10/67	6.5	7.5	7.0
0.5% B-Nine & 0.25% Cycocel spray 10/3/67	7.4	7.4	7.4
0.25% Cycocel drench	8.6	7.6	8.1
Mean	9.1	8.2	8.7
Propagated 8/28/67			
Check	13.0	11.2	12.1
0.5% B-Nine spray 10/3/67	12.0	11.2	11.6
0.25% Cycocel spray 10/3/67	9.2	9.3	9.3
0.25% B-Nine and 0.15% spray 10/3/67	9.0	9.4	9.2
0.15% Cycocel drench 10/3/67	8.6	8.8	8.7
Mean	10.4	10.0	10.2
Propagated 9/25/67			
Check	10.8	6.8	8.8
0.5% B-Nine spray 10/30/67	9.2	7.1	8.2
0.25% Cycocel spray 10/30/67	7.3	6.2	6.3
0.25% B-Nine and 0.15% Cycocel spray 10/30/67	7.1	6.6	6.9
0.15% Cycocel drench	6.9	6.1	6.5
Mean	8.3	6.6	7.5

Table 18. Influence of Propagation Date and Growth Retardant Treatment on the Bract Diameter (in.) of Poinsettias, cv. 'Barbara Ecke Supreme' and cv. 'Paul Mikkelsen'

Retardant treatment	Cultivar		Mean
	BES	PM	
Propagated 8/14/67			
Check	11.7	10.9	11.8
1.0% B-Nine spray 9/14/67	12.1	11.3	11.7
0.25% Cycocel sprays 9/14/67 and 9/2/67	11.0	9.7	10.4
0.5% B-Nine and 0.25% Cycocel 9/14/67	11.4	10.3	10.8
0.25% Cycocel drench 9/14/67	11.1	10.0	10.6
Mean	11.5	10.4	11.0
Propagated 8/28/67			
Check	14.4	11.9	13.2
1.0% B-Nine spray 10/3/67	13.6	11.0	12.3
0.25% Cycocel sprays 10/3/67 and 10/10/67	11.0	10.0	10.5
0.5% B-Nine and 0.25% Cycocel spray 10/3/67	11.3	10.0	10.7
0.25% Cycocel drench 10/3/67	11.9	10.2	11.1
Mean	12.4	10.6	11.5
Propagated 8/28/67			
Check	14.1	11.4	12.8
1.0% B-Nine spray 10/3/67	14.2	11.1	12.7
0.25% Cycocel spray 10/3/67	12.8	10.9	11.8
0.25% B-Nine and 0.15% Cycocel spray 10/3/67	13.3	11.2	12.3
0.15% Cycocel drench 10/3/67	13.0	10.4	11.7
Mean	13.5	11.0	12.3
Propagated 9/25/67			
Check	9.9	11.1	10.5
0.5% B-Nine spray 10/30/67	12.1	11.5	11.8
0.25% Cycocel spray 10/30/67	11.2	10.0	10.6
0.25% B-Nine and 0.15% Cycocel spray 10/30/67	11.8	10.1	11.0
0.15% Cycocel drench 10/30/67	11.4	9.7	10 6
Mean	11.3	10.5	10.9

A single spray of B-Nine caused the least reduction in plant height and bract diameter on all propagation groups, Tables 17 and 18. Two sprays of 0.25% cycocel applied one week apart produced the shortest plants and the greatest reduction in bract diameter with plants propagated on August 14 and August 28. A single drench of 0.15% cycocel produced the greatest height reduction in the September 25 propagated plants. Both the cycocel drench and the single cycocel spray yielded the greatest reduction in bract diameter for plants propagated on September 25. In comparing the growth retardant treatments on the two August 28 propagation groups, the higher rate of the materials retarded the height and bract diameter more than the lower rate. In this study, cycocel was a more effective growth retardant on poinsettia than B-Nine, cycocel sprays were often more effective than cycocel drenches. The leaves of cycocel sprayed plants often exhibited temporary chlorosis. The combination spray of cycocel and B-Nine gave little if any chlorosis and was almost comparable to the cycocel spray in growth retardation. With very few exceptions the two cultivars yielded the same response to the growth retardant treatments.