# Precision Spray Formation in Pompons*

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You can produce any type of pompon spray you desire by proper control of length of day and temperature from the stock plant to bloom. The growing period, soil, fertilizer, planting distance, thinning, and water influence the production, rate of growth and other obvious habits; but the most important factor affecting spray formation is daylength. If you know what you want, you can produce it.

This crowned spray with long laterals is produced with four short days (to crown the stem) followed by 30 long days to develop the laterals, then short days to flower. Notice the crown bud has not developed. The crown can be produced low and replace the first pinch by giving the stock plants four short days 15 to 20 days before cuttings are taken. Any other type of spray on each stem can be produced by continuing this treatment with others suggested here. The following timing fits normal season.

Sample timing follows:

| Plant | Tip Pinch | Short Days | Long Days | Short Days | Bloom |
|---|---|---|---|---|---|
| Jul 1 | Jul 10 | Jul 25 | Jul 28 | Sep 3 | Nov 3 |

Excessively long pedicels, having the appearance of disbudded sprays, develop when short days (12 or more) for budding are followed by 20 or more long days. Flowers here are also poorly shaped.

The crown bud largely controls the spray type. Crown buds result when a few short days are followed by long days (Cornell Bulletin 595; 1934). Recent observations in timing operations indicated that crown buds might form regardless of daylength, after the plant reached the proper size (Delworth, Flor. Rev. July 31, 1941, and December 19, 1946). Recently short days were found necessary for crowning regardless of age, even though shoots had grown three months from the pinch (N. Y. State Flower Growers Bulletin 38, October, 1948).

Timed pinching for spray formation is pinching to work with daylength for crowning. It doesn't always work the same because the days are not proper for crowning at the same time each year. Many more problems involving crowning are unsolved and are now under investigation. If the days are long(15 hours or more) throughout the life of the plant, crown buds do not form. Three or four short days in succession produce crown buds on early varieties and four or five short days produce crown buds on late varieties. It is quite probable that crown buds will form under longer days than are required for a terminal bud cluster.

The crown bud is obvious if the short day interval is followed by five or more long days before the short day is continued. Crowns are not evident if no long days follow the short day cycle.

* The author is indebted to Mr. Harry Allyn, Bigflats, N. Y., for conducting preliminary studies in 1948 and to Mr. Fred F. Horton and his staff for the manipulations and records in these experiments, and to Miss Marion Ruff, of the Bailey Hortorium, for the drawings.

## Many Spray Types Possible

These results have become evident over several years of experimentation and observation. The control of spray formation will greatly change the appearance of varieties. Disbudded types of sprays can be produced without disbudding. Branched sprays can be produced without pinching as shown by Kiplinger and Alger (Amer. Soc. Hort. Sci. Proc. 52:478-480; 1948). Varieties which produce clustered flower heads can be made to open and display the individual flowers to better advantage. Obviously heavier, more desirable sprays can be produced under the poor light conditions in winter.

## Crown May Develop

The length of the long day treatment, following the short days, determines the amount of development of the crown. If the long day interval is less than 20 days, the crown bud will usually develop with the terminal clusters forming later due to the last long day period. If the long day interval between the short day treatments is 30 or more days, the crown bud usually aborts and does not flower.

## Doubleness Affected

We previously (Amer. Soc. Hort. Sci. Proc. 43:311-315; 1943) found doubleness was associated with the long and short days in the cycle previous to flowering. Singleness has been observed by growers for many years but the cause was unknown. Princeton produced open centers (singleness) when 7 short days were followed by 10 or more long days. Fourteen short days followed by 20 long days gave no open centers but increased doubleness in the flower compared with continuous short days.

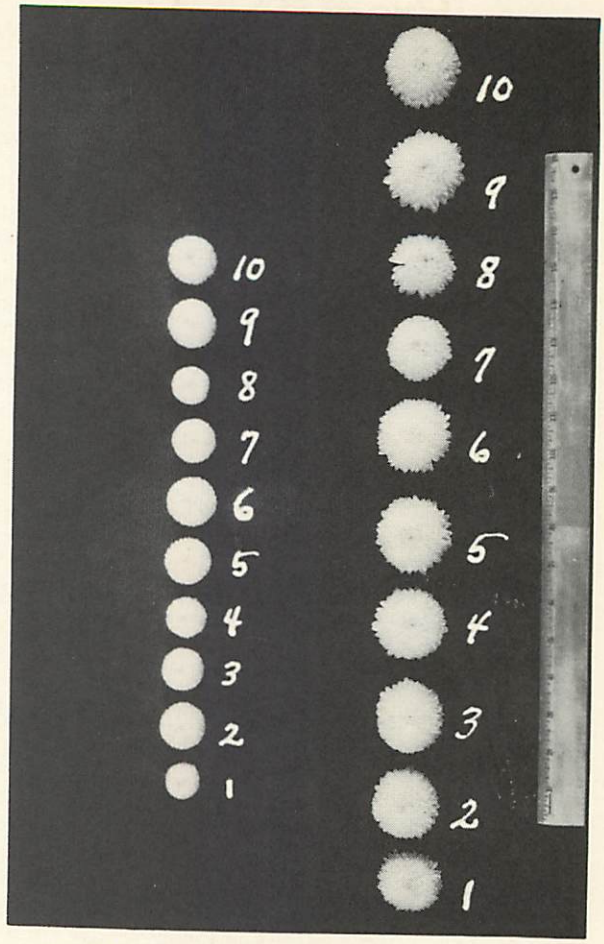
## Cuttings Do Not Bud

Cuttings do not form buds until they have started to root. We thought we could form a crown bud by short day treatment of plants in the rooting media and a trial last summer, repeated this winter, shows that cuttings remain vegetative under short days until the roots are present. They bud quickly after this.

When cuttings were given 15 short days, starting the date they were placed in the rooting media, no plants showed crowns. All cuttings crowned when the short day was continued for 22 days. The cuttings were rooted on the 15th day and were planted in soil. The stimulus for budding followed the planting to soil in the next 7 days. These crown buds appeared about two feet above the ground and were considered too high for a pinch. Grown as a branched spray of one stem per plant, they would be excellent.

## Crowning Plants Short

Short day treatment of the stock plants before the cuttings were made caused crown buds to appear if four short days were given to the stock plants and this was followed by 10 long days before the cuttings were removed from the stock.




**The diameter of the flowers is not greatly influenced by the long day treatment following short days for budding. Flower depth is greater and the length of the pedicels spaces the flowers considerably making them look much larger than the diameter would indicate.**

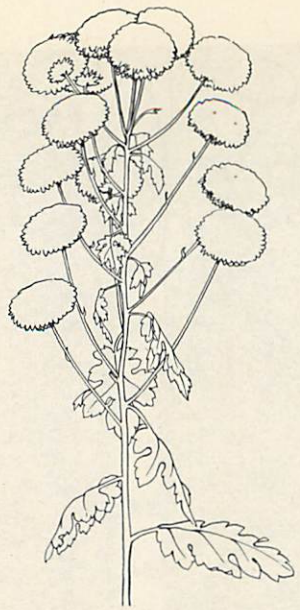
**Left: Pinoccio. Right: Gold Coast. Numbers 4, 7, 8 were given three or less short days before the long day cycle. Three short days produced a crown bud. Number 1 was given continued short days after the start. All other treatments were six or more short days, which budded part of the stem, and five or more long days to develop buds as crown.**

Cuttings removed at the end of the 4 short days did not produce crowns. Those cuttings removed 5 days after the short day treatment did form crowns on about half the cuttings.

These cuttings were rooted and grown in the bench at 60 degrees. The crowns formed 22 inches above the ground and did not appear for about 45 days after the short day treatment. Real low crowns, which often form on cuttings, are doubtless induced by a short day treatment, which was given 4 or 5 weeks before the cuttings were removed from the stock plants.

## Pinch to Short Days and Openness of Cluster

The openness of the terminal spray cluster is also affected by the length of the growing period from the pinch to short days. If days are long enough to prevent crowning,



THIS TYPICAL TERMINAL SPRAY IS PRODUCED BY CONTINUED SHORT DAYS FROM THE START.

SAMPLE OF TIMING --

| PLANT | TIP PINCH | SHORT DAYS | BLOOM |
|---|---|---|---|
| JUL 1 | JUL 10 | AUG 5 | OCT 5 |

THIS CROWNED SPRAY WITH SHORT LATERALS HAVING TERMINAL CLUSTERS IS PRODUCED WITH FOUR SHORT DAYS (TO INDUCE THE CROWN BUD) FOLLOWED BY FIVE LONG DAYS (TO PRODUCE SECONDARY GROWTH). THE SECONDARY SHOOTS FORM TERMINAL CLUSTERS DUE TO THE SECOND SHORT DAY TREATMENT. THE FLOWERS ARE BUNCHED IN A FLAT HEAD ON THE END OF THE SPRAY.

SAMPLE OF TIMING --

| PLANT | TIP PINCH | SHORT DAYS | LONG DAYS | SHORT DAYS | BLOOM |
|---|---|---|---|---|---|
| JUL 1 | JUL 10 | AUG 5 | AUG 9 | AUG 14 | OCT 14 |

THIS CROWNED SPRAY WITH LONGER LATERALS IS PRODUCED BY GIVING 4 SHORT DAYS (TO CROWN THE STEM) FOLLOWED BY 15 LONG DAYS (TO PRODUCE THE LATERALS). THE SPRAY IS OPENED AND IS A DESIRABLE TYPE FOR DISBUDDING OF SUCH VARIETIES AS GOLDSMITH AND LITTLE AMERICA. IT MAY BE DESIRABLE AS A SPRAY FOR SMALLER FLOWERED TYPES.

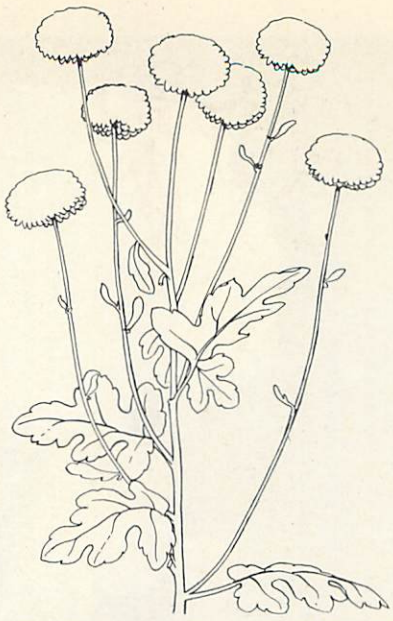
SAMPLE OF TIMING --

| PLANT | TIP PINCH | SHORT DAYS | LONG DAYS | SHORT DAYS | BLOOM |
|---|---|---|---|---|---|
| JUL 1 | JUL 10 | AUG 5 | AUG 9 | AUG 24 | OCT 20 |

THIS DOUBLE CROWNED SPRAY WITH LONG LATERALS RESULTS WITH 6 SHORT DAYS FOLLOWED BY 15 LONG DAYS.

SAMPLE OF TIMING --

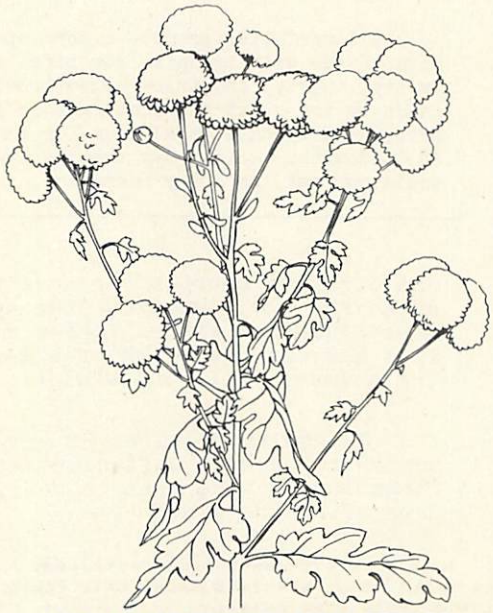
| PLANT | TIP PINCH | SHORT DAYS | LONG DAYS | SHORT DAYS | BLOOM |
|---|---|---|---|---|---|
| JUL 1 | JUL 10 | AUG 5 | AUG 11 | AUG 26 | OCT 20 |



THIS TERMINAL SPRAY WITH CROWN FLOWERS IS PRODUCED BY GIVING 12 SHORT DAYS FOLLOWED BY 8 TO 20 LONG DAYS. OPTIMUM LENGTH OF LONG DAY TREATMENT DEPENDS UPON THE VARIETY. PINOCCIO, GOLD COAST, ARCADIA, AND SIMILAR VARIETIES GIVE THE BEST SPRAY FORMATION WITH 10 LONG DAYS. PRINCETON, GOLDSMITH, PROBABLY LITTLE AMERICA, AND SIMILAR TYPES WILL BE BEST WITH ABOUT 15 LONG DAYS. THE BLOOMING TIME IS DELAYED BY ABOUT THE SAME NUMBER OF DAYS AS LONG DAYS IN THE SECOND CYCLE, I.E. 10 OR 15.

SAMPLE OF TIMING --

| PLANT | TIP PINCH | SHORT DAYS | LONG DAYS | SHORT DAYS | BLOOM |
|---|---|---|---|---|---|
| JUL 1 | JUL 10 | AUG 5 | AUG 17 | AUG 27 | OCT 17 |



THIS TRIPLE CROWNED SPRAY RESULTS WITH 8 SHORT DAYS FOLLOWED BY 15 LONG DAYS. BUDDING CONTINUES DOWN THE STEM DEPENDING ON THE NUMBER OF SHORT DAYS IN THE CYCLE.

SAMPLE OF TIMING --

| PLANT | TIP PINCH | SHORT DAYS | LONG DAYS | SHORT DAYS | BLOOM |
|---|---|---|---|---|---|
| JUL 1 | JUL 10 | AUG 5 | AUG 13 | AUG 28 | OCT 20 |

THIS TYPE OF SPRAY IS PRODUCED BY GIVING 10 SHORT DAYS, SOFT PINCHING, THEN CONTINUING THE SHORT DAY TREATMENT FOR 10 MORE DAYS. THIS SHORT DAY TREATMENT IS FOLLOWED BY 15 LONG DAYS TO STRETCH THE SECONDARY STEMS AND ENLARGE THE FLOWERS. THE SHORT DAY TREATMENT THEN CONTINUES TO FLOWERING TIME. THE STEMS MUST BE WITHIN 6 INCHES OF THE DESIRED HEIGHT BEFORE PINCHING BECAUSE LITTLE GROWTH OCCURS THEREAFTER. ABOUT 15 DAYS LONGER IS REQUIRED TO PRODUCE THIS SPRAY THAN OTHERS. THIS IS AN EXCELLENT TREATMENT FOR POTTED PLANTS BY PLANTING ROOTED CUTTINGS AUGUST 8 AND FOLLOWING THE SCHEDULE BELOW FROM AUGUST 18. BLOOMING DATE OF THIS SPRAY IS NOVEMBER 1.

SAMPLE OF TIMING --

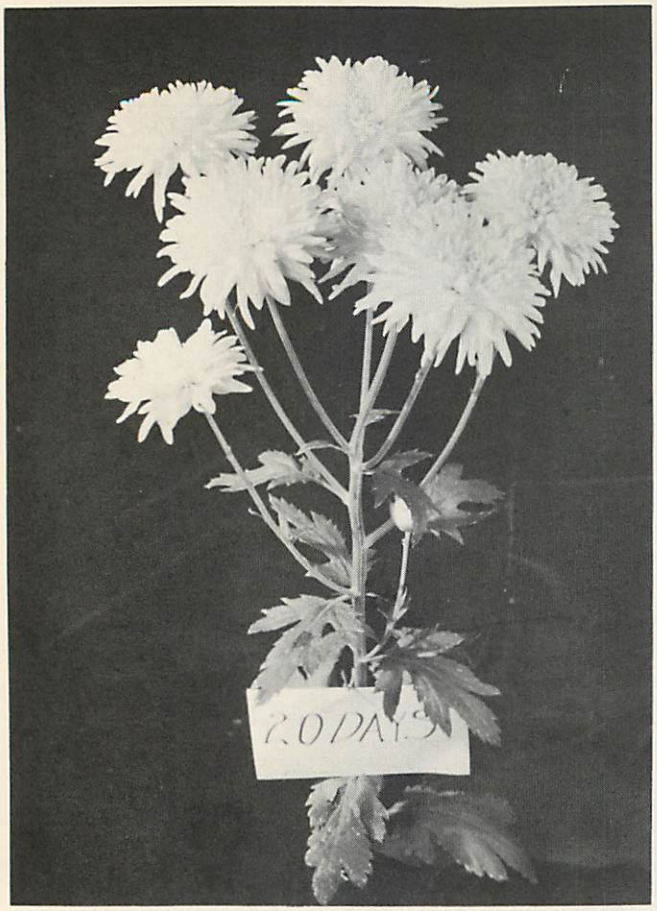
| PLANT | TIP PINCH | SHORT DAYS | TIP PINCH | LONG DAYS | SHORT DAYS |
|---|---|---|---|---|---|
| JUL 1 | JUL 10 | AUG 18 | AUG 28 | SEP 8 | SEP 23 |

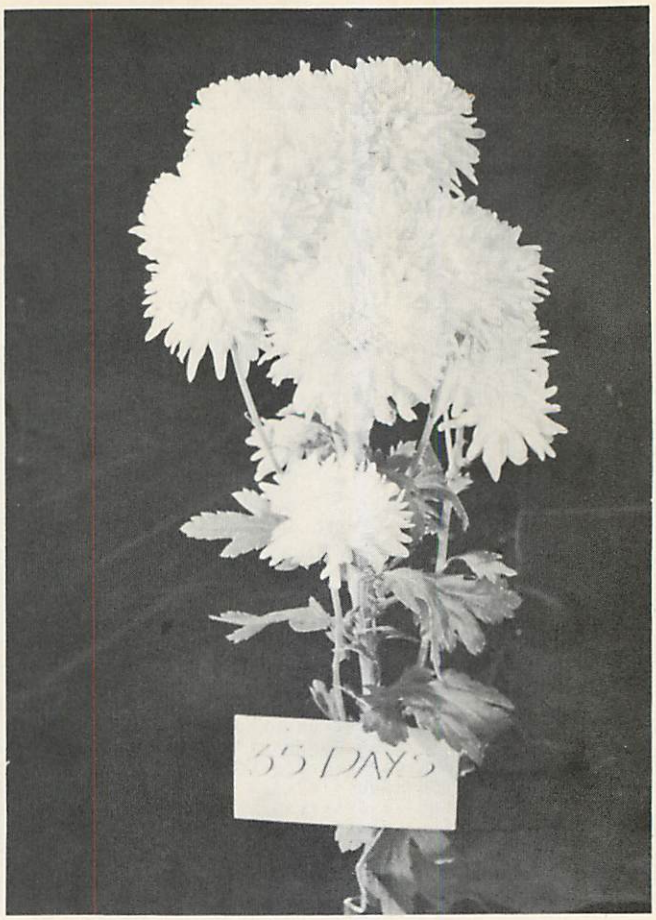
## Pennsylvania takes Seeley

WE REGRET WE MUST ANNOUNCE DR. JOHN Q. SEELEY LEAVES CORNELL, JULY 1. YOU ARE ALL FAMILIAR WITH THE EXCELLENT RESEARCH HE CONDUCTED AND HIS RESULTS PUBLISHED IN PAST ISSUES OF THE BULLETIN AND ELSEWHERE. DR. SEELEY'S ABSENCE FROM CORNELL WILL SLOW THE RESEARCH PROGRAM CONSIDERABLY, AND HIS ABSENCE WILL BE FELT AT THE SHORT COURSES AND ON YOUR VISITS TO CORNELL.

CONGRATULATIONS PENNSYLVANIA GROWERS ON YOUR CHOICE OF AN EXCELLENT MAN TO HEAD THE WORK AT PENN STATE. DR. SEELEY IS VERY WELL QUALIFIED FOR THE RESPONSIBILITY YOU ARE PLACING UPON HIM. WE IN NEW YORK STATE HOPE THAT YOU WILL MAKE EQUIPMENT, PERSONNEL, AND OTHER NECESSITIES AVAILABLE SO AS NOT TO HAMPER HIS ABILITY AND ENTHUSIASM FOR SOLVING FLORIST PROBLEMS.

DR. SEELEY, WE CONGRATULATE YOU ON YOUR NEW POSITION. WE ARE HAPPY TO HAVE HAD YOUR ASSOCIATION AND WISH TO THANK YOU FOR THE SPLENDID WORK YOU DID. MAY YOU ENJOY YOUR WORK AND MAY THE ENTIRE FLORIST INDUSTRY PROFIT BY YOUR EFFORTS





**All varieties produce a more open spray when given fewer growing days from pinch to short days. Twenty, thirty, and thirty-five growing days from pinch to the start of short days is illustrated here. Thirty days is minimum for sufficient stem on Goldsmith. A long day treatment after budding would correct the spray formation.**

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and continue short after once they are reduced for bud formation, the spray becomes more clustered with a longer growing period. This has occurred with treatments given during summer, fall, and winter.

Goldsmith requires 30 growing days in summer to produce sufficient stem. The spray formation is more open on stems given 20 long days after the pinch.

Crowning and disbudding laterals (4 short days, 15 long days) or producing a terminal spray and developing a crown cluster (12 short days followed by 15 or 20 long days) are necessary treatments to produce extremely high quality.

NOTE: All timing operations are lengthened in winter, according to New York State Flower Growers Bulletin 39.

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Your Editor, Kenneth Post