

## Ancymidol Spray Considered for use on Pot Tulips

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Pot tulip production presently plays a relatively minor role in the North Carolina floriculture industry. In the past few years, though, more and more flower growers have added pot tulips to their spring crop production. Much of the guesswork has been taken out of the forcing of this crop, thanks mainly to the work of Dr. A. A. De Hertogh, formerly at Michigan State University and now department head at North Carolina State University.

An important problem encountered by the grower and by the retail purchaser of pot tulips is excessive height. Tulip stems continue to increase in length even after flowering occurs. Thus, if height is not a problem encountered by the grower, it may well plague the consumer after the pot is placed in the home.

Ancymidol (tradename A-Rest) has been shown to be an effective growth retardant for many tulip cultivars. In the Holland Bulb Forcer's Guide, Dr. De Hertogh mentioned three main reasons for ancymidol usage on tulips:

- (1) to control total plant height at time of marketing
- (2) to control post-flowering elongation of the tulip stem
- (3) to reduce the incidence of stem topple and possibly flower blasting

It is known that the ancymidol requirement can be greatly increased when applied as a drench on bark-based media. This poses a problem to the many flower growers in North Carolina who use a bark-based mix as their standard potting medium. Therefore, the objective of this experiment was to test the effectiveness of ancymidol applied as a soil drench and as a foliar spray on two tulip cultivars grown in bark-based and soil-based media. A foliar application of the material, if proved effective, would circumvent the problem associated with the potting medium.

### Materials and Methods

Tulip cvs. Bing Crosby and Paul Richter were chosen for this study due to the fact that Bing Crosby is known to be sensitive to ancymidol, while Paul Richter is relatively insensitive to treatment with this chemical. The bulbs, donated by the Netherlands Flower Bulb Institute, were received in Raleigh on September 22, 1978, and were potted on October 12, 1978. Half of the bulbs of each cultivar were potted (7 bulbs per 6½" azalea pot) in a medium consisting of 2 parts soil:1 part acid peatmoss. The remaining bulbs were potted in a medium consisting of 3 parts pine bark humus:1 part sand:1 part acid peatmoss. The cold temperature treatment lasted a total of 15 weeks: 7 weeks at 9°C, one week at 5°C and 7 weeks at 2°C. The plants were brought into the greenhouse January 30, 1979, and fertilized with 20-20-20 (200 ppm N) alternated with 2 lbs/100 gal. calcium nitrate once each week.

On February 5, 1979, a 0.5 mg/pot ancymidol drench was applied to one third of the pots in each soil treatment within each cultivar. Another third received 64 ppm ancymidol sprayed to runoff. The final third was sprayed with water to serve as the control group.

## Treatments:

- (1) Bark-based mix - drench
- (2) " - spray
- (3) " - control
- (4) Soil-based mix - drench
- (5) " - spray
- (6) " - control

## Rates:

- 0.05 mg A-Rest/pot
- 64 ppm A-Rest
- No A-Rest
- 0.05 mg A-Rest/pot
- 64 ppm A-Rest
- No A-Rest

When the flowers were 50% colored the total plant heights, flower lengths and lengths of the first and last internodes were measured. The plants were then taken from the greenhouse and observed under home conditions until senescence.

## Results

Bing Crosby

Spraying the plants with ancymidol had little effect on those grown in the pine bark medium, while the drench application caused the total height and the length of the first internode to be slightly reduced (see Table 1). The drench application also reduced the post-flowering growth in the bark medium. Plants grown in the soil-based medium showed a slight reduction in total height and in the lengths of the first and last internodes in response to the sprayed ancymidol (see Figure 1). Drenching the soil caused the total height and length of the first internode to be reduced greatly while reducing the length of the last internode only slightly. The post-flowering growth was also reduced by the ancymidol drench.

Paul Richter

The drench application to the soil-based medium consistently reduced the total heights and lengths of the first and last internodes, whereas the spray had no effect (see Table 1). Ancymidol applied as a drench to the bark-based medium reduced the total height and the lengths of the first and last internodes, although not to as great an extent as in the soil-based medium. When applied as a spray to the plants grown in the bark-based medium, these same lengths were greater than those of the control (see Figure 2). In both media, the drench application reduced post-flowering growth only slightly.

## Conclusions

Ancymidol applied as a foliar spray is much less effective than it is when applied as a soil drench. It is generally recommended not to use ancymidol when plants are growing in a bark medium because the bark can increase the ancymidol requirement. This experiment demonstrates that this is basically true. Because of the great popularity of bark as a growing medium ingredient in the Southeastern United States, it would be helpful to many greenhouse operators to know the ancymidol requirements when employing this medium. This study indicates that cultivars react differently to a bark-medium drench. Paul Richter appeared to be more sensitive than Bing Crosby in this respect, which is unusual, in that Bing Crosby is usually much more sensitive than Paul Richter to ancymidol.

Figure 2. Paul Richter grown in bark-based medium (photographed Feb. 22, 1979)  
1) Ancyridol drench  
2) Ancyridol spray  
3) Control

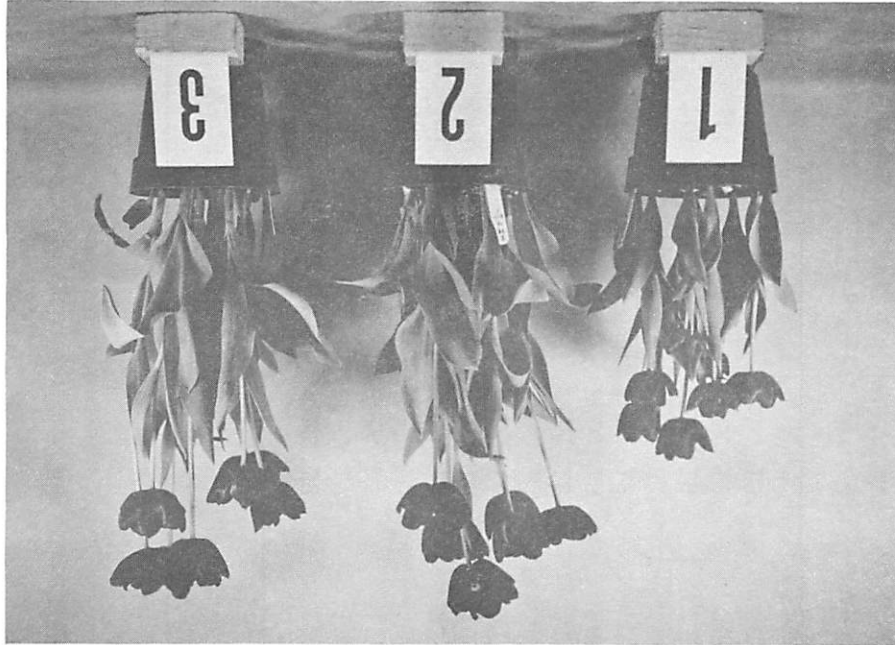


Figure 1. Bing Crosby grown in soil-based medium (photographed Feb. 22, 1979)  
4) Ancyridol drench  
5) Ancyridol spray  
6) Control

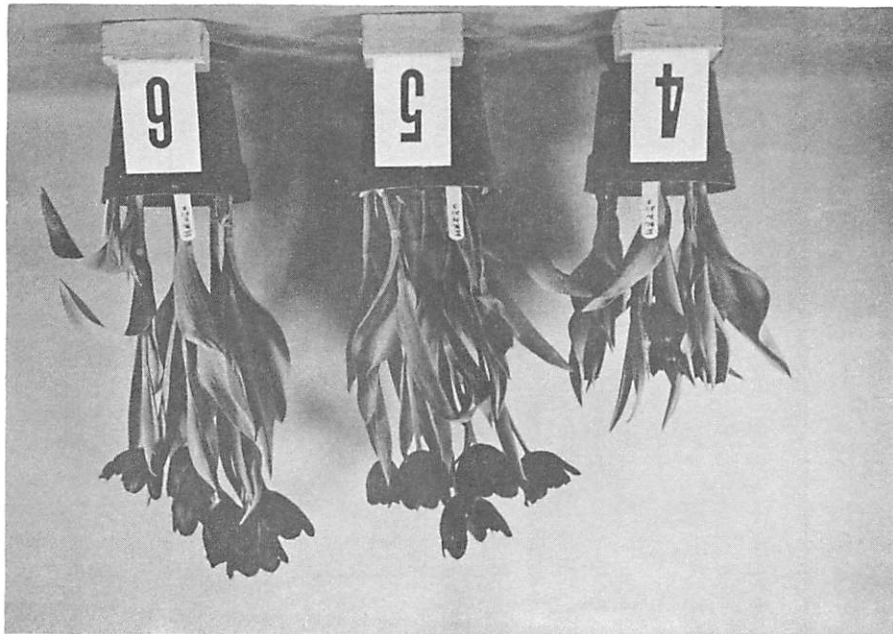


Table 1. Effects of Ancymidol applied as a soil drench and as a foliar spray to two cultivars of tulips in bark-based and soil-based media.

Cultivar	Treatment	Average date of flowering	Average days to flower	% of plants flowering	Length (cm)				
					Flower	Total Plant*	Internodes	Last	
						First			
Bing Crosby	3:1:1 Drench	Feb. 18	20	71	4.8	18	3.0	3.7	
	3:1:1 Spray	Feb. 17	19	85	4.8	19	3.3	3.6	
	3:1:1 Control	Feb. 17	19	95	4.7	19	3.5	3.6	
	2:1 Drench	Feb. 19	21	71	5.0	14	.8	3.7	
	2:1 Spray	Feb. 18	20	85	5.1	23	4.3	4.0	
	2:1 Control	Feb. 19	21	81	5.1	26	5.3	4.7	
	Paul Richter	3:1:1 Drench	Feb. 19	21	100	3.6	23	2.1	6.3
		3:1:1 Spray	Feb. 18	20	90	3.7	29	3.4	8.9
		3:1:1 Control	Feb. 18	20	90	3.8	27	3.1	7.3
2:1 Drench		Feb. 19	21	100	3.9	21	1.6	6.0	
2:1 Spray		Feb. 18	20	93	4.1	27	3.2	7.0	
2:1 Control		Feb. 18	20	90	4.1	27	3.2	7.4	

\*Measured from nose of bulb to tip of petals when flower reached 50% colored stage of development.