INFLUENCE OF A-REST® ON THE HEIGHT OF POTTED TULIPS
Progress Report

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Three years ago, tests were run to determine the effect of A-Rest® on the overall height of potted tulips. Sprays and soil drenches of various concentrations were quite effective in shortening leaves and reducing the height of flowers above the pot rim. Application timing was found to be most important in producing desirable height control with a minimum amount of growth regulator. When plants were treated 2 to 4 days after they were moved from the rooting rooms to the greenhouse, relatively small amounts of A-Rest® produced maximum effects. If this time interval was increased, progressively more material was required to produce beneficial effects on tulip height control.

The early formulations of A-Rest® used in the original tests were different from the one presently marketed. Consequently, tests were run in 1974 to determine if tulip response would differ from that observed when early A-Rest® formulations were used.

Bulbs of the cultivars 'Pink Supreme,' 'Denbola,' 'Virtuoso,' and 'Invasion' were potted between November 6 and 12, 1973. Five bulbs were placed in 5½-inch plastic pots containing the standard potting soil mix of native silt loam combined with peat, perlite, and redwood sawdust used by Sunnyside Nurseries, Inc., Salinas, California, where the tests were run. Each treatment of a cultivar was made up of three pots containing five bulbs each, replicated three times. Therefore, the plot, as reported in table 1, consisted of nine pots containing a total of 45 bulbs per variety. As soon as the bulbs were planted, the soil was watered thoroughly and the pots placed in rooting rooms, where they remained until they were transferred to a greenhouse on March 13, 1974.

Two days after the bulbs arrived in the greenhouse, they were treated with soil drenches of A-Rest® at a volume of approximately 4 ounces of drench solution to supply the desired dosage of 0.2, 0.4, 0.6, and 0.8 mg active ingredient per pot. Control treatments consisted of an application of tap water at the rate of 4 ounces per pot.

Records were taken on the day each cultivar reached the stage of development considered commercially prime for shipment to market. These dates were the following, by cultivar:

'Invasion'	–	March 28
'Pink Supreme'	–	March 30
'Denbola'	–	March 30
'Virtuoso'	–	April 1

Table 1 shows the results of these treatments.

TABLE 1. Effect of A-Rest ® Soil Drenches on Height of Four Tulip Cultivars

Treatment	Plant Height (Inches)*			
	'Pink Supreme'	'Denbola'	'Invasion'	'Virtuoso'
Water drench (control)	12.5	11.5	11.4	10.8
A-Rest ® drench (mg/pot):				
0.2	9.1	7.7	8.1	6.5
0.4	9.7	6.6	7.8	6.4
0.6	9.6	6.3	7.9	5.8
0.8	8.3	5.8	7.2	5.3

*Average distance between pot rim and top of tallest flower bud, for the nine pots in each treatment.

Additional observations indicated that some A-Rest® treatments caused a slight delay in flowering, but, in no instance, was the delay more than one or possibly two days, even at the higher treatment rates. There was some malformation of the 'Virtuoso' flowers. However, the treated plants exhibited no more malformation than the amount found on control plants. It was concluded that the flower distortion was not a problem connected with the use of A-Rest® but rather a peculiarity of that cultivar.

The condition known as blasting of the flower buds was virtually absent in three of the cultivars tested. 'Denbola' presented a somewhat different problem. Table 2 shows the total blasted-bud count for each treatment of nine pots containing a total of 45 bulbs of this cultivar. There was some evidence of bud blasting in all treatments, including the control. The only treatment that apparently caused excessive bud injury was that of the highest rate, 0.8 mg active ingredient per pot.

TABLE 2. Blasted Buds of 'Denbola' Tulips

Treatment	Total Number Blasted Buds
Control	4
A-Rest ® (mg/pot):	
0.2	5
0.4	4
0.6	5
0.8	11

CONCLUSIONS

Results of this test confirmed those obtained during the past few years and published in the *Florists' Review* Volume 150, Number 3889 (6-15-72):21-23, 55-58. A-Rest® does control height development in tulip flowers. The degree of height retardation is usually found to be somewhat proportional to the amount of active ingredient applied per pot. This is not always the case, as can be seen by the data presented here and in earlier work. Which dose is the correct one is open to debate, because marketing channel specifications of desirable tulip height are not uniform throughout the country or even within California.

Should A-Rest® eventually be registered for use on tulips, the recommended rates will have to be broad enough to encompass diversity of responses exhibited by the various tulip cultivars. At this writing, it appears that application rates of 0.2 to 0.6 mg per pot would be necessary to produce the most satisfactory height control. For most cultivars, the 0.2 or 0.4 mg rate would seem to be sufficient. However, with broad differences in soil mixtures that nurseries use, some qualification might have to be made to compensate for the differences.

If A-Rest® is registered for use on tulips, it will be essential for the grower to test the effectiveness of this material under his own cultural conditions on the cultivars he grows. Small lots of bulbs should be used to determine the correct dosage for individual situations.

Registration for the use of this material on tulips has not been completed. Therefore, the foregoing does not constitute a recommendation. It is merely preparatory information should such be needed to complete registration.