

Poinsettia Propagation and Fungicides

James W. Boodley
Department of Floriculture
Cornell University

Grower inquiries following the poinsettia growing season of 1967 were received with the question being asked, "Will Dexon drenches or Dexon-Terraclor applications stunt my poinsettias?" Some growers observed that the last propagations of the season when treated with these materials did not grow. Extra fertilizer applications and increased forcing temperatures failed to result in stem elongation and some plants failed to flower.

In Geiger News, Vol. 3 #6 December 1967, Editor Henry Ridgway quoted some work by Richard T. Vanderbilt of Conrad Pyle Nurseries that Dexon-Terraclor, Terraclor alone and Morsodren (1:5000) materially retarded or prevented the rooting of rhododendron cuttings when applied as a hormone powder. They also reported that the fungicides Captan, Ferbam, Potassium permanganate (1:2500) Phaltan and Zineb definitely improved the rooting of cuttings under the same conditions.

Since Captan, Dexon and Terraclor are all utilized by flower growers in the production of poinsettias it was felt that a study of their effects on rooting should be made.

A preliminary study using the cultivar Barbara Ecke Supreme was made in March 1968.

Treatments used were:

1. Control—no treatment
2. Captan 75% WP 1 lb/100 gal water
3. Captan 75% WP 2 lbs
4. Dexon 70% WP 4 oz
5. Dexon 70% WP 8 oz
6. Terraclor 75% WP 1½ lbs
7. Terraclor 75% WP 3 lbs
8. Dexon 70% WP 4 oz plus Terraclor 75% WP 4 oz
9. Dexon 70% WP 8 oz plus Terraclor 75% WP 8 oz

The materials used were applied as a drench to the propagating medium prior to sticking cuttings. The medium used was 2 parts by volume sphagnum peat moss; 1 part #4 (fine) vermiculite; 1 part perlite. To each bushel of medium was added 4 ounces of ground limestone and 2 ounces 20% superphosphate. The propagation medium was put into 6-inch clay pots. There were four cuttings per pot with four pots per treatment.

The cuttings were rooted under low-pressure intermittent mist that was fortified with 4 oz of 23-21-17 fertilizer per 100 gallons of water.

The cuttings rooted and were evaluated five weeks after sticking. It was recognized that the rooting period was too long and any suppressive influence of the materials could have been reduced by the mist and the long time of root-

ing. As it was there was some evidence to show that Captan and Terraclor did have a stimulating effect on the rooting of the cuttings with Dexon and Dexon-Terraclor combinations suppressing rooting.

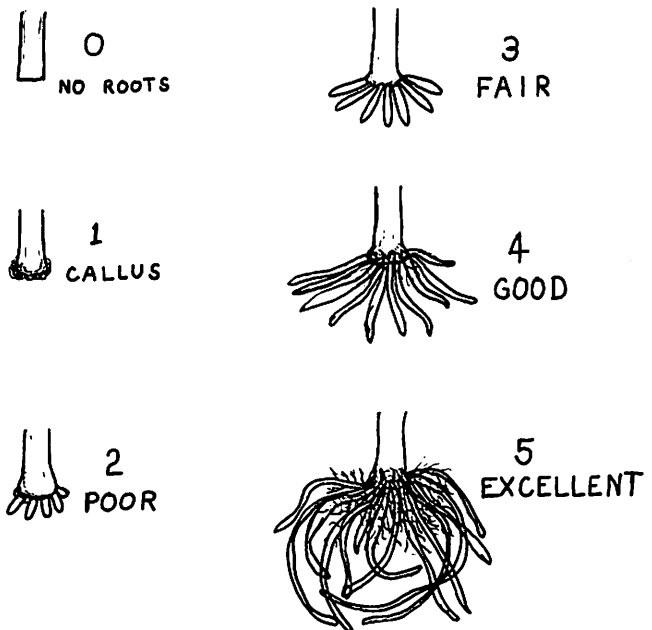
A second experiment was begun with the cultivar Paul Mikkelsen propagated August 6, 1968. Uniform cuttings were taken and placed directly in 2½" clay pots that were filled with peat-moss-vermiculite, Cornell peat-lite Mix A. The cuttings were placed under a mist-fertilizer regime as described. There were 10 cuttings per treatment. The treatments used were the same as those previously described. Treatments 4 and 5 were repeated two weeks after the initial applications.

The fungicides were applied as a soil drench August 8. The cuttings were continued under the mist using a decreasing time schedule until August 29 at which time they were evaluated. This time period of three weeks after treatment was considered to be the optimum rooting period for the cultivar used.

The plants were removed from the mist bench. The propagation medium was carefully and as thoroughly as possible washed from the root system. The root systems were graded on the following basis:

- | | |
|--------------|---------------|
| 0 = no roots | 3 = fair |
| 1 = callus | 4 = good |
| 2 = poor | 5 = excellent |

Figure 1 is a drawing of the approximations used.



(continued on page 5)

Poinsettia

(continued from page 4)

The longest root was measured in centimeters. After measuring, the roots were removed from the cutting and fresh weights taken. Only root tissue and no stem tissue was removed.

The results of the the study are shown in Table 1.

Table 1. Effect of various fungicides, drenches on the fresh weight, length of roots, degree of rooting and percent of rooting of Paul Mikkelsen poinsettias. Propagated August 6, 1968, treated August 8, evaluated August 29. Ave. of 10 cuttings per treatment.

Treatment	Fresh Weight gram	Length cm	Root grade	% Rooting
1. Control	2.06	3.38	3.40	90
2. Captan 75% WP 1 lb. ^a	2.59	5.32	4.65	100
3. Captan 2 lb.	2.36	4.22	4.05	100
4. Dexon 70% WP 4 oz. ^b	0.17	1.07	1.50	70
5. Dexon 8 oz.	0.38	1.30	1.90	60
6. Terraclor 75% WP 1½ lb.	1.98	4.27	3.60	90
7. Terraclor 3 lb.	0.91	2.80	2.50	90
8. Dexon 4 oz. & Ter'clor 4 oz.	0.13	0.67	1.00	30
9. Dexon 8 oz. & Ter'clor 8 oz.	0.10	0.60	1.40	40

^a amounts are for 100 gallons of water

^b treatments 4 and 5 were repeated 2 weeks after the initial applications

The use of Captan 75 WP as a medium drench at one pound per 100 gallons of water resulted in the greatest number of cuttings rooted, with the highest fresh weight, the longest length and the best root grade. The Captan drenched plants were superior to those in the control treatment.

Increasing the concentration of Captan to two pounds per 100 gallons caused a general reduction in the three factors considered. However, this treatment was still the second best.

Depending on the factors considered, Terraclor at the 1½ pound rate or the control treatment were the next best. Doubling the concentration of Terraclor caused a significant reduction in fresh weight, root length and grade classification.

Dexon applied alone or in combination with Terraclor at rates normally recommended as soil drenches severely reduced the rooting capacity of the cuttings in all the categories measured. Fresh weight, root length and root grade were all materially reduced.

The results of this study would appear to agree with the findings of Vanderbilt. The effect of Captan enhancing the rooting of cuttings is substantiated by VanDoesburg who found that Captan combined with a hormone significantly increased the percentage of rooting of four conifers (1).

The practical implications of these findings for the poinsettia producer should be obvious. Dexon or Dexon-Terraclor treatments should never be made to propagated material that is still in the propagating bench. The propagating medium should not be pretreated with Dexon

alone or Dexon-Terraclor combinations. These materials should only be used after a strong root system has developed that can withstand the application.

Captan and Terraclor when used individually at the rates of one pound and one and one-half pound respectively resulted in an improvement of rooting over the control plants.

Since no combination of Captan and Terraclor was made, it is not known what the effects of such a treatment may be.

It should be pointed out that the stimulating effects were a result of a single application of material. It is possible that continued applications to a propagation medium that is not removed from the bench when the cuttings are removed could result in a cumulative effect that would eventually cause reduction in rooting. Where cuttings are rooted in pots that are transplanted to the growing-on container this should not occur.

The implications of the Dexon effect on the root development would suggest that growers use the material cautiously even on finish potted plants. Indiscriminate repeat applications may possibly be harmful.

References

1. Van Doesburg, Jr. J. The use of a combination of a fungicide with a root promoting substance. Abstract XVI Int. Hort. Congress, Brussels, Belgium (Reported in Vol. 9 No. 1 The Plant Propagation March 1963).
-