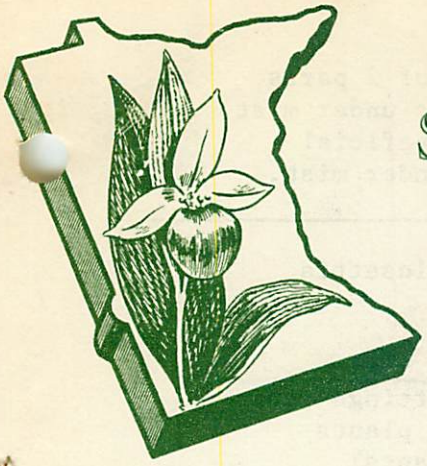

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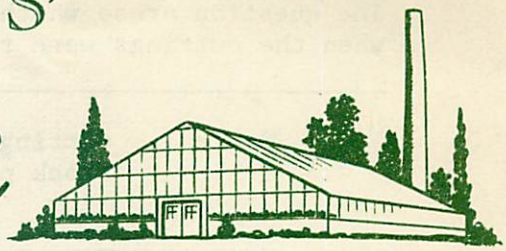

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POINSETTIA PRODUCTION[1]

R. E. Widmer and Wayne L. Lough[2]

The usual practice in handling stock plants, prior to taking cuttings, has been to pinch out the tip of new growing shoots when they are 6 to 8 inches long, to induce branching. Shanks (4) advocated pinching all shoots at the same time and at the same level, if possible, for early season pinching. For later in the season he advocated taking cuttings from the strongest shoots and pinching weaker shoots so that no growing tips remain on the plant.

Barbara Ecke Supreme #1 stock plants in the University greenhouse were pinched in the usual manner in the spring of 1959. On June 30, one half of the 34 plants were pinched back or top pruned to one level, and the other half was neither pinched nor pruned. No further pinching was done after this date on any of the plants. A record of cutting production is given in Table 1.

It is interesting to note that the top-pruned plants averaged 5.5 more cuttings per plant. The plants were grown at a minimum temperature of 60° F. A higher minimum temperature would have resulted in greater production for both treatments.

Root-Promoting Hormones

Kirkpatrick (1) reported that indolebutyric acid stimulated the root production of cuttings. Since that time the root-promoting hormones have come into wide use on poinsettia cuttings rooted in sand, vermiculite or similar media.

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[2] Associate Professor and Research Assistant respectively

Widmer (5) reported good rooting of poinsettias in a soil mix of 2 parts sphagnum peat moss, 1 part soil and 1 part sand in 2½ inch pots under mist. The question arose whether root-promoting hormones would be beneficial when the cuttings were rooted in an organic soil mixture and under mist.

Table 1. Cutting production of Barbara Ecke Supreme poinsettia stock plants.

Date of propagation	Number of cuttings from plants top-pruned June 30 (17 plants)	Number of cuttings from unpruned plants (17 plants)
July 16	21	72
July 24	120	111
July 30	90	90
August 10	130	124
August 14	55	53
August 21	116	102
August 24	68	78
August 28	69	30
September 4	49	88
September 9	45	45
September 11	92	58
September 16	149	159
Total	1104	1010
Average/plant	64.9	59.4

A study was undertaken to determine what effect Hormodin #2 (indole-butyric acid) Rootone, Rootone F, Cutstart XX and Chloromone would have on the rooting of poinsettias in soil under mist. The first four materials are commonly used in the trade. Kamp and Van Drunen (2) (3) reported that Chloromone was very effective in stimulating root production on Pfitzer Juniper and Hatfield Yew. Groups of cuttings of Barbara Ecke Supreme were treated in July, August and September. Cuttings were considered rooted when roots were visible on the outside of the soil ball. Results are shown in Table 2. (See page 3)

All hormones used improved the rooting. Rootone F provided the least improvement, but inadequate mist coverage influenced the rooting adversely with both the August 21 and the August 28 groups. Chloromone improved rooting to the greatest extent over the check, and both Rootone and Cutstart XX gave very good results. Hormodin #2, which was somewhat less effective than some of the other materials, was hindered to some extent by inadequate mist coverage of the August 21 group of plants.

Table 2. Influence of root-promoting hormones on rooting of cuttings of Barbara Ecke Supreme variety of poinsettia in soil in 2½-inch pots under mist.

Date of taking cuttings	Number of cuttings per treatment	Days under mist	Treatment[1] (percent rooted)					
			Check	Hormodin #2	Rootone F	Rootone	Cutstart XX	Chloromone
		18	68.0	71.7	—	—	—	—
July 16	46	22	97.8	91.3	—	—	—	—
		20	50.0	89.1	82.6	91.1	71.7	—
July 24	46	25	75.0	97.8	93.4	100.0	82.6	—
August 14	53	21	60.4	—	—	—	—	100.0
		19	82.3	75.6[2]	66.6[2]	81.1	83.7	94.4
August 21	37	26	97.0	89.1[2]	86.1[2]	100.0	97.2	94.4
		19	87.2	51.5	48.4[2]	—	—	—
August 28	33	25	100.0	81.8	75.7[2]	—	—	—
		21	16.0	78.0	78.0	52.0	92.0	86.0
September 16	50	35	98.0	100.0	100.0	100.0	100.0	100.0
Average for lesser no. of days			60.7	73.2	68.9	74.7	82.5	90.2
Average for greater no. of days			88.0	92.0	88.8	100.0	93.3	98.1

[1] Chloromone was applied by immersing the basal end of the cuttings in ¼ strength solution. All other treatments were applied dry to the basal end using a powder duster.

[2] Inadequate mist coverage of portions of this treatment influenced the rooting percentage.

All treatments rooted 100 percent or close to 100 percent when unrooted cuttings were left under the mist for a longer period of time.

Rapid rooting is desirable to the commercial grower because it decreases the possibility of plant loss, decreases costs and frees the misted area for additional lots of cuttings. Therefore it is desirable on the basis of this study to use a root-promoting substance on poinsettias rooted in soil in 2½-inch pots under mist. The grower should remember, however, that the root-promoting substances used in this study were applied either as a liquid, or with a powder duster when applied in dry form. Dipping the bottom end of the cutting directly in the powder may result in accumulation of the powder inside the hollow stem, and possibly "burning" of the stem. This burning will be very similar to a rot in appearance.

If the grower chooses to use the powder dip method and wishes to avoid injury, he may have to make his cut at the node where the stem is solid, use a more dilute hormone powder or make an effort to tap out any powder accumulation that is inside the stem. Wetting of the cutting is not necessary. Keeping the cuttings dry before sticking may help somewhat to prevent the powder accumulation inside the stem. All factors in mind, use of a powder duster or a liquid might prove to be preferable.

Rooting Media

Previous work (5) showed that good rooting of poinsettias in soil in 2½-inch pots under mist was obtained if a 2-1-1 (2 parts sphagnum peat moss, 1 part soil and 1 part sand) soil mixture was used. Commercial growers who tried this mixture have not always had the best results. In some instances inadequate mist coverage was responsible. In other instances inferior grades of peat moss have been used or the soil mixture otherwise modified. Other media have sometimes given better results in commercial ranges. Such varied results prompted the investigation of the use of additional mixtures in 1959.

Media used included the check 2-1-1 mix, 1 part unscreened sphagnum moss and 1 part sand, 1 part sphagnum peat moss and 1 part perlite, 1 part unscreened sphagnum moss and 1 part perlite, 1 part screened sphagnum moss and 1 part perlite. Each of these mixtures was used on three or more occasions during the summer. A mixture of 1 part screened sphagnum moss and 1 part sand was used twice. Single lots of the following were also tried: 3 parts unscreened sphagnum moss and 1 part perlite, unscreened sphagnum moss and screened sphagnum moss. Clay pots were used throughout the entire study.

The results are given in Table 3. Because the number of lots of each medium used was not equal, it will be easier to interpret the results from Table 4 where average rooting for each medium is compared with average rooting for the equivalent check (2-1-1) lots.

Peat and perlite, screened sphagnum moss and perlite and plain sphagnum moss provided rooting equal to that in check lots. All other media provided quicker rooting. The mixtures of sphagnum moss (unscreened) and perlite were the most effective. When screened sphagnum moss was used, the best results were obtained where it was used straight or mixed with sand.

Table 3. Influence of soil media on rooting of cuttings of Barbara Ecke Supreme variety of poinsettia in 2½" pots under mist.

Date of taking cuttings	Number of cuttings per treatment	Days under mist	Rooting media[1] (percent rooted)								
			2 peat 1 soil 1 sand	1 perlite 1 peat	1 scr. sphag. 1 perlite	1 sphag. 1 perlite	1 sphag. 1 sand	1 scr. sphag. 1 sand	3 sphag. 1 perlite	sphag.	scr. sphag.
July 30	35	22	74.2	—	—	85.7	62.8	—	94.2	75.0	—
August 10	48	23	43.5	54.1	50.0	—	—	60.4	—	—	—
August 24	29	18	26.6	62.0	58.6	79.3	75.8	—	—	—	—
September 4	30	19	76.6	66.6	76.6	—	66.6	—	—	—	83.3
September 16	21	23	52.3	14.2	14.2	80.9	—	63.6	—	—	—
Average			54.6	49.2	49.9	82.0	68.4	62.0	94.2	75.0	83.3

[1] peat = sphagnum peat moss
sphag. = sphagnum moss
scr. sphag. = screened sphagnum moss
perlite = horticultural grade
sand = plasterer's sand
soil = loam

Table 4. Average rooting of cuttings of Barbara Ecke Supreme variety of poinsettia in various media compared with average rooting for the equivalent check (2-1-1) lots.

Number of lots of cuttings	Rooting media[1] (percent rooted)								
	2 peat 1 soil 1 sand	1 perlite 1 peat	1 screened sphagnum 1 perlite	1 sphagnum 1 perlite	1 sphagnum 1 sand	1 screened sphagnum 1 sand	3 sphagnum 1 perlite	sphagnum	screened sphagnum
4	49.8	49.2	49.9	—	—	—	—	—	—
3	51.0	—	—	82.0	—	—	—	—	—
3	59.2	—	—	—	68.4	—	—	—	—
2	47.9	—	—	—	—	62.0	—	—	—
1	74.2	—	—	—	—	—	94.2	75.0	—
1	76.6	—	—	—	—	—	—	—	83.3

[1] peat = sphagnum peat moss
sphagnum = sphagnum moss
perlite = horticultural grade
sand = plasterer's sand
soil = loam

Quickness of rooting is not the only factor to consider, however, as ease of handling, weight, quality of finished product and final rooting percentage are also significant.

Unscreened sphagnum moss is bulky and clumsy to handle. A combination of sphagnum moss and sand is heavier than the 2-1-1 mix and the extra weight is undesirable. Sphagnum moss and mixtures of sphagnum moss and perlite, sand or peat do not hold together very well when knocked out of the pot for panning. Although this is not a serious factor with most plants, it is undesirable with the sensitive poinsettia. Using peat rather than clay pots may eliminate this disadvantage.

The "synthetic" or non-soil media require more frequent fertilization and the grower must exercise care to keep the plants from getting too hard. On the other hand, he may find it easier to control the height of the plant in a sphagnum moss and perlite or sand mixture.

In view of these disadvantages and the fact that close to 100 percent rooting was obtained in all instances with a little more time under mist, the mixture of 2 parts peat moss, 1 part soil and 1 part sand still appears to be a desirable medium. The final choice lies with the individual grower.

Conclusions

1. Top pruning Barbara Ecke Supreme stock plants to one uniform level on June 30 increased production by 5.5 cuttings per plant.

2. The rooting of poinsettia cuttings in soil in 2½-inch pots under mist is significantly accelerated by the use of root-promoting hormones.

3. Good rooting of poinsettia cuttings in pots under mist is obtained when a mixture of 2 parts peat moss, 1 part soil and 1 part sand is used, but quicker rooting is obtained when mixtures of unscreened sphagnum moss and perlite or plain screened sphagnum moss are used.

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