PROPAGATION OF DWARF CRAPEMYRTLES[1]

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Abstract. Studies were conducted with hardwood and softwood crapemyrtle cuttings to determine factors influencing rooting. At the end of a 50-day test period, hardwood cuttings in a cold frame did not root well enough to transplant and under mist in a greenhouse rooted only 40%. Best rooting resulted from subterminal leafy cuttings taken in June, treated with rooting compound and placed under mist.

REVIEW OF LITERATURE

The Arkansas Agricultural Experiment Station has been conducting research on selection and evaluation of dwarf crapemyrtles, *Lagerstroemia indica* L., since 1960. In preparation for release of several new cultivars, investigation was made into the propagation techniques for this crop.

Egolf (1) stated that crapemyrtle is easily propagated vegetatively by softwood, hardwood and root cuttings and plant division. Hartmann and Kester (2) list only a single method for this species; leafy cuttings under mist during the summer. Observation of commercial nursery operations suggest that difficulty is often experienced in rooting of crapemyrtles.

The objectives of the two studies reported here were to assess the influence of various plant factors upon the rooting of stem cuttings. An attempt was made to determine the best combination of plant factors and propagation practices to facilitate large volume reproduction.

MATERIALS AND METHODS

Hardwood Cuttings. Fifteen cm long hardwood stem cuttings were collected on March 20, 1971 from field grown plants. Cuttings were selected from 1 yr old wood of 3 diameter sizes; 7 mm, 10 mm, 12 mm (1/4, 3/8, 1/2 inch, respectively). All basal cuts were straight across with no wounding. Bundles of 10 cuttings per size were then placed under four rooting situations with two levels of applied rooting preparation. Three rooting treatments utilized a concrete cold frame under lath and the cuttings were stuck 6 inches deep in 1) sand, 2) field soil or 3) sawdust. Treatment 4 was placed under intermittent mist in a greenhouse. Rooting preparation levels were 1) no application and 2) a 10 sec dip in a liquid formulation of 0.5% IBA, 0.5% NAA, 0.01% phenylmercuric acetate, 0.0175% Boron (Jiffy Grow #2). Periodic evalua-

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[1] Published with the approval of Director, Arkansas Agricultural Experiment Station.

tions were made of all treatments and final evaluation of rooting was made May 10 at which date the study was terminated.

Softwood Cuttings. Terminal and subterminal cuttings of new wood were taken on June 6 and again on August 10 and placed in a greenhouse mist bed containing a mixture of peat and sand (1:1v/v). Each 6-inch terminal cutting had about 8 leaves and the subterminal had 4. Terminal cuttings were about 1/2 the diameter of the subterminal and noticeably more succulent. Groups of both cutting types were stuck with and without a rooting preparation, a talc formulation of 4.0% Thiram, 0.113% NAA, 0.007% IBA (Rootone).

A 4 x 4 latin square experimental design was employed with 20 cuttings per treatment. Rooting response was evaluated 30 days after initiation of each respective trial. Root bulk was measured by length and dry weight. These data were subjected to tests of statistical significance.

RESULTS

Hardwood Cuttings. Diameter of hardwood cuttings greatly influenced the rooting performance in the cold frame in early spring. Only the largest size (12 mm) cuttings developed callus, vegetative sprouts or roots in all three media. Under mist in a greenhouse, the small diameter cuttings rooted as well as large ones if rooting compound was applied (Table 1).

Table 1. Response of dwarf crapemyrtle hardwood cuttings to rooting situation and applied rooting compound (C).

Diameter	Treatment[1]	Sprouting		Rooting	
(mm)		Percent	Avg. length (cm)	Percent	Avg. length (cm)
7	Mist + C	60	6.6	40	9.8
10	Mist + C	50	9.0	40	6.2
12	Mist	70	12.0	40	8.3
12	Mist + C	100	7.0	30	9.0
12	Sand	90	6.0	0	—
12	Sand + C	60	6.8	90	3.6
12	Soil	80	3.7	0	—
12	Soil + C	10	3.0	50	3.0
12	Sawdust	20	7.0	0	—
12	Sawdust + C	10	2.0	0	—

[1] Only treatments which showed callus are presented. Each treatment consisted of 30 cuttings and the hormone treatment (C) was Jiffy Grow #2.

Sand appeared to be the best rooting medium in the cold frame, since 90% of the treated 12 mm cuttings produced some roots by the end of the 50 day period. Soil was next with a 50% response with similar treatment, while cuttings in sawdust produced only callus but no roots. Although rooting occurred in the cold frame on many cuttings, none of these root systems were extensive enough to allow transplanting.

Under mist in the greenhouse the highest rooting percentage was 40% and 7 mm cuttings, with rooting preparation applied rooted equally as well as 12 mm cuttings with or without treatment. All cuttings that rooted under mist were able to be transplanted, yet these roots were extremely brittle. Cuttings from all treatments which rooted or callused did sprout but there was no consistent relationship between sprouting and rooting.

Softwood Cuttings. From the June propagation, terminal and subterminal cuttings rooted 100% regardless of applied rooting perparation. The applied root promoting compound, however, increased root length and dry weight (Table 2). The greatest dry weight developed on subterminal treated cuttings.

With an August propagation, cuttings rooted less readily than in June, yet there were no differences in root length among cuttings which did root. Root dry weight was significantly higher on terminal cuttings without rooting preparation and subterminal with preparation than the two other treatments.

Table 2. Rooting response of terminal and subterminal softwood dwarf crapemyrtle cuttings to time of summer propagation and applied rooting compound (C).

Treatment	Number Rooted[1]	Roots per cutting	
		Avg. length (cm)	Avg. dry wt. (mg)
June			
Terminal	20	6.8a[2]	71 a
Terminal + C	20	8.1 b	89 b
Subterminal	20	6.2 a	70 a
Subterminal + C	20	8.0 b	120 c
August			
Terminal	15	8.1 a	87 a
Terminal + C	17	8.1 a	59 b
Subterminal	16	7.4 a	75 c
Subterminal + C	16	7.8 a	88 a

[1] 20 cuttings per treatment.

[2] Means in a column by propagation dates followed by a common letter are not significantly different at the 5% level of probability as judged by Duncan's New Multiple Range Test.

DISCUSSION

The rather poor rooting ability of hardwood cuttings of dwarf crapemyrtles appears to limit large volume commercial operations. After a 50 day greenhouse period under mist, the maximum rooting did not exceed 40% even with a commercial root promoting preparation. In a cold frame under ambient temperatures, the rooting response was also commercially unsatisfactory. Possibly, additional time would improve rooting, but it is doubtful that any increase would be markedly more beneficial.

Softwood cuttings taken in June root well in 30 days under mist and the greatest root tissue is obtained from a subterminal cutting with an applied rooting compound. June propagations are superior to August cuttings. The poorer response in August may occur because plants of this species are largely in flowering stages during the later summer months.

LITERATURE CITED

1. Egolf, D.R. 1971. Plants commemorating persons II. Lagerstroemia, the opulent crapemyrtles. *Morris Arboretum Bul.* 22(2):19-58.
2. Hartmann, H.T. and D.E. Kester. 1968. Plant Propagation: Principles and Practices. 2nd Ed. Prentice-Hall, Englewood Cliffs, N.J., p. 626.

CHARLIE HEUSER: Thank you, Al. Our next paper is by Lonnie Lankford, who is going to give us some insight into the propagation of MM 106 by softwood cuttings.