Mist Propagation of Juvenile Cherrybark Oak Cuttings

Abstract. Greenwood apical cuttings from 1- to 4-month-old cherrybark oak (*Quercus falcata* var. *pagodaefolia* Ell.) seedlings have been rooted in 4 weeks under mist, after treatment with indolebutyric acid. The technique is suitable for establishing small clones.

The oaks are generally considered difficult to root, although there are reports of successful propagation of *Quercus borealis* after indolebutyric acid treatment (*3, 5*). Bonner air-layered young cherrybark oak with moderate success (*1*). Kurmes and Boyce reported that two genetically identical seedlings of cherrybark oak can be produced by splitting a single embryo (*4*).

Methods

On March 4, May 10, and June 21, 1963, apical cuttings 3 to 4 inches long were taken from a single half-sib family of seedlings raised in a greenhouse from acorns planted on January 28, 1963. The March collection was made immediately after the initial flush of growth and later collections after subsequent flushes; all cuttings were slightly lignified when taken. Leaves were pruned to a length of 1.5 to 2.0 inches; then cuttings were treated with IBA (0, 100, 200 ppm, 24-hour basal soak) and planted in sandflats under continuous mist (*2*).

A randomized block design with four replications of 20 cuttings per treatment was used on all three dates. Each replicate was assigned to a single flat. Temperature in the mist chamber varied from 70° to 90°F, with temperatures in the June test being slightly higher than in the first two. A 16-hour photoperiod was maintained with incandescent lights.

At the end of four weeks the tests were dismantled and the amount of rooting determined.

TABLE 1.—ROOTING OF GREENWOOD STEM CUTTINGS OF JUVENILE CHERRYBARK OAK AFTER 4 WEEKS UNDER MIST

Collection date	IBA concentration	Rooting percentage	Roots per rooted cutting
	Ppm		*No.*
March 4	0	21	2
	100	71	20
	200	76	21
May 10	0	25	2
	100	40	7
	200	44	9
June 21	0	0	0
	100	6	2
	200	6	1

Results

IBA treatment stimulated rooting, but in all treatments success declined with age of the plant from which the cutting was taken (Table 1). A combined analysis of data from the three tests indicated that age and IBA treatment effects were significant at the 0.01 level; the age-treatment interaction was significant at the 0.05 level. There was no significant difference between the effects of 100 and 200 ppm IBA. While the data suggest that cherrybark oak loses considerable rooting capability during its first season of growth, the possibility that aging was confounded with other factors prevents firm conclusions on the subject.

Plants from which cuttings were taken developed one to three vigorous new shoots after decapitation. New apical growth on rooted cuttings was also rapid. Thus, by repropagating seedlings and their ramets, small clones of cherrybark oak can be established in a few months' time. This procedure may be useful in research requiring genetically uniform oak.

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Reprinted from JOURNAL OF FORESTRY, volume 63, number 6, pp. 463-464. June 1965.