

MALEIC HYDRAZIDE UNSUITABLE FOR CONTROLLING HEIGHT GROWTH OF GREEN ASH AND SHUMARD OAK SEEDLINGS

F. T. Bonner¹
Southern Forest Experiment Station
Forest Service, U.S.D.A.
Stoneville, Miss.

In southern nurseries, hardwood seedlings often grow so large that they are difficult to lift and plant. In a study at the Southern Hardwoods Laboratory, maleic hydrazide (MH) was tested as a means of halting height growth when seedlings reach suitable size.

Seeds of green ash (*Fraxinus pennsylvanica* Marsh.) and Shumard oak (*Quercus shumardii* Buckl.) were nursery sown during the summer of 1961. When the seedlings were 15 inches tall (August 1), 30,000 and 15,000 p.p.m. were applied as sprays; the sprays were in amounts sufficient to run off the leaves. A third area was left unsprayed. The spray was applied about 8 a.m.; a shower the night before had left the seedlings turgid.

The treatments reduced height growth during the remainder of the season, but there was no significant difference between MH levels (table 1). The average height difference between treated and untreated seedlings was much greater for green ash than for Shumard oak. MH also slowed the diameter growth of green ash and apparently increased that of

TABLE 2.--Average heights of green ash and Shumard oak after one growing season, depending on amount of MH application

Species	0	15,000 p.p.m.	30,000 p.p.m.
Green ash.....	54.3	44.2	42.2
Shumard oak...	19.8	19.2	17.2

Shumard oak, but these differences were not significant.

Ten seedlings from each plot were lifted the following spring and planted at the nursery at a 2- by 3-foot spacing. Average heights are given in table 2.

MH had a slight, but statistically insignificant, residual effect on total height. More important, the terminal buds of treated seedlings hardly grew, and the only increase in height came from profuse development of lateral branches. Therefore, the seedlings were bushy, and in green ash--a species with opposite buds--nearly all were forked.

This study indicates that MH, at least at the concentrations studied, is unsuitable for controlling height growth in these two species. Other chemical growth regulators are available and should be tested. Partial success has been reported with Phosfon-D on black locust (1), but no mention was made of out-planting for evaluation of residual effects.

A change in sowing date or in irrigation and fertilization practices may also affect height growth, and these variables should be investigated.

TABLE 1.--Height and stem diameter growth after MH treatment

MH level (p.p.m.)	Increase in height		Increase in stem diameter	
	Green ash	Shumard oak	Green ash	Shumard oak
0..	<i>Inches</i> 5.2	<i>Inches</i> 3.2	<i>Inches</i> 0.28	<i>Inches</i> 0.12
15,000..	1.0	1.3	.18	.16
30,000..	.6	1.5	.13	.13

¹The author is stationed at the Southern Hardwoods Laboratory, which is maintained at Stoneville, Miss., by the Southern Forest Experiment Station in cooperation with the Mississippi Agricultural Experiment Station and the Southern Hardwood Forest Research Group.

Literature Cited

(1) Williams, R. D. 1962. Phosfon-D retards height growth of black locust. U.S. Forest Serv. Tree Planters' Notes 51, pp. 5-6, illus.