STATION NOTE

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CENTRAL STATES FOREST EXPERIMENT STATION
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YELLOW-POPLAR SEED QUALITY VARIES BY SEED TREES, STANDS, AND YEARS

The number of year-old yellow-poplar (Liriodendron tulipifera L.) seedlings grown from equal quantities of seed varies as much among individual seed trees within a stand as among stands of different geographic location. Moreover, production will vary from one year to another. This information was obtained from an experiment begun in the Central States in 1952 to study the effects of seed source on growth and development of yellow-poplar plantations.

Seed was collected from five different seed trees in each of six different stands located in Ohio, Indiana, and Illinois. Collections were made in 1952, 1954, and 1955. The number of samaras[1/] collected from each seed tree was determined by counting and weighing representative samples. All seed was stratified over winter and sowed the spring after collection at the State Tree Nursery, Marietta, Ohio.

By using tree percents--the ratio of the number of 1-0 seedlings produced to the number of seeds sown--as a standard for seed quality, interesting differences are apparent (table 1). First, there are wide variations in tree percents among seed trees in each source, as well as among sources. Second, and of great significance, for 4 out of 6 sources one seed tree was superior to the others for each of the 3 years tested, and for the other two sources one seed tree was superior to the others for 2 out of 3 years. Tree percents were consistently low for some seed trees and seed sources, and consistently high for others.

If individual trees from seed collection stands could be classified as to quality of their seed this would obviously boost efficiency of seed collection and increase amount of germination. It is well known that amount of seed produced varies greatly by years; apparently fluctuations in seed quality of yellow-poplar are also common. In stands where seed is collected repeatedly, small-scale tests of individual trees making up the stand will aid in future selection of seed trees. A study of criteria for judging good seed trees, now in progress, may help this important but little-known phase of our reforestation job.

1/ Yellow-poplar "seeds" are samaras with two embryos, one of which is nearly always aborted.

Table 1.--Effects of seed sources, seed trees, and years of seed collection on the quality of yellow-poplar seed

Seed source	Year collected	Tree percent (Ratio of seedling quantity to number of seeds sown)					
		Seed trees					Stands
Marietta Ohio	52	1.11	7.64*	0.93	0.88	0.66	1.95
	54	4.90	5.03*	2.26	3.88	1.55	3.58
	55	2.90	8.60*	1.40	6.90	2.10	3.42
Athens Ohio (A)	52	0.21	0.00	0.25*	0.00	0.13	0.12
	54	.20	1.50	6.76*	2.11	1.06	2.27
	55	.10	.50	2.00*	.90	1.40	.97
Athens Ohio (B)	52	0.74*	0.47	0.73	0.68	0.00	0.51
	54	.91	1.91	1.98	.91	4.45*	2.17
	55	.80	.70	1.10	.30	2.10*	1.12
Zaleski Ohio	52	0.35	0.39	0.17	0.47*	0.13	0.28
	54	2.16	.90	.65	2.62*	.76	1.54
	55	.80	.10	.60	2.00*	.60	.87
Cannelton Indiana	52	20.71*	2.74	4.79	7.28	3.47	6.90
	54	2.52*	1.86	1.44	.59	.55	1.44
	55	6.80*	1.00	1.10	1.00	2.10	2.32
Hardin Co. Illinois	52	0.35	0.48	0.23	0.50	3.99*	1.11
	54	.10	.18	.13	.14	.40*	.21
	55	1.70*	.00	.30	.20	.90	.97

* Best seed tree for each source and collection year.

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