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NORTHEASTERN RESEARCH NOTES

NORTHEASTERN FOREST EXPERIMENT STATION

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NO EXCEPTIONAL VIGOR FOUND IN HYBRID PINES TESTED

Hybrid trees, like hybrid corn, may have exceptional qualities their parents did not have. But extensive tests are needed to pick out the hybrids that have desirable characteristics such as exceptionally fast growth and good form.

Crosses of pitch x loblolly pine and shortleaf x pitch pine have been made by the California Forest and Range Experiment Station, and in 1943 hybrid seed from these crosses was sent to the Northeastern Forest Experiment Station for testing. Through the cooperation of the New Jersey and Delaware state foresters, the seedlings were grown in state nurseries.

The seedlings were planted in 1945 at the Eastern Shore Experimental Forest near Pittsville, Md., and in the Lebanon State Forest near Mount Misery, N. J. For comparison, ordinary stock of shortleaf pine and loblolly pine was also planted, but no pitch pine because neither nursery had any.

Survival

The pitch x loblolly hybrids usually survived the best of any of the stock planted in this study (table 1). When planted, these hybrids had well-developed, extremely fibrous root systems; and they had suffered little winter injury or damage in lifting.

But most of the shortleaf x pitch hybrids have died. Only 2 percent are still alive in New Jersey, no more than 29 percent in Maryland. When planted, most of these seedlings were very small, had suffered extensively from winter injury, and many were prostrate.

The ordinary seedlings of shortleaf and loblolly pine generally survived better than the shortleaf x pitch hybrids--even though the former had been injured more before planting.

The plantings in Maryland have survived better and grown more than those in New Jersey, apparently because of the moister site.

Growth

The pitch x loblolly hybrids grew better than any of the other stock in the New Jersey plantings. They also grew well in the Maryland plantings, but here the ordinary loblolly grew better.

The shortleaf x pitch hybrids exhibited the poorest growth--in both New Jersey and Maryland. Many of these trees are still prostrate and less than 1.5 feet in height.

None of the stocks planted in this study

Table 1.--Survival and growth of hybrid pines and ordinary nursery stock, 1945-50

Nursery	Stock	Planted (1945)	Living (1950)	Average height (1950)	Average 6-year growth
		Number	Percent	Feet	Feet
	EASTERN SHORE EXPERIMENTAL FOREST, MARYLAND				
Green Bank, N. J.	Pitch(V6) x loblolly(V22)	245	79.6	10.8	10.1
	Loblolly	196	30.1	13.1	12.1
	Shortleaf	196	56.1	7.8	7.1
Milford, Del.	Pitch(V28) x loblolly(V22)	49	77.6	9.7	9.2
	Pitch(V27) x loblolly(V22)	49	36.7	7.0	6.5
	Pitch(V29) x loblolly(V22)	28	71.4	7.6	6.9
	Shortleaf(N46) x pitch(V29)	15	13.3	0.6	0.3
	Shortleaf(V22) x pitch(V29)	196	28.6	6.3	5.8
	Shortleaf[1]	147	3.4	6.7	4.8
	Loblolly	147	46.3	13.2	12.4
	LEBANON STATE FOREST, NEW JERSEY				
Green Bank, N. J.	Pitch(V6) x loblolly(V22)	439	62.9	5.0	4.3
	Shortleaf(V22) x pitch(V29)	147	2.0	1.2	0.9
	Shortleaf(N46) x pitch(V29)	147	2.0	3.6	3.3
	Loblolly	392	12.5	4.5	3.5
	Shortleaf	196	42.9	4.0	3.4

[1] 3-0 stock. All other was 2-0.

have grown as fast as natural reproduction. In the Eastern Shore plots, some native loblolly and pond pines became established and overtopped the pitch x loblolly hybrids in the 5 years between examinations. In New Jersey the fastest growing stock in this study, the pitch x loblolly hybrids, grew 4.3 feet in height in 6 years, but in a nearby area the tallest natural seedlings of shortleaf and pitch pine on stocked quadrats grew 11 feet in 6 years.

Conclusions

None of the hybrids tested in this study showed any evidence of exceptional vigor.

The shortleaf x pitch hybrids have been quite unpromising. The seed from the crosses of these species produced very few seedlings, and they have survived and grown poorly. For example, 650 seeds of the shortleaf (N46) x pitch (V29) cross produced only 15 seedlings that were planted; and only two of those are still alive--0.5 and 0.8 feet tall. Only a few of the shortleaf x pitch hybrids have grown passably well.

The pitch x loblolly pines might have some value for reforestation work--if stock could be obtained economically--because they have a well-developed, fibrous root system that enables them to survive well. However, these hybrids are developing into trees that have larger limbs and are not quite so straight as ordinary loblolly pine.

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