

OHIO AGRICULTURAL EXPERIMENT STATION
Wooster, Ohio

April 20, 1953

Forestry Mimeograph No. 5

A Pine Planting on Old Strip-mine Banks

By

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In recent years there has been a trend away from the use of pines in reforesting strip-mined areas in Ohio. This has been largely a result of poor survival on some spoil types and consistently poor initial growth on most spoil types. Few pine plantings in the state are old enough to show what happens to the stand after the first few years of relative stagnation are passed. A 17-year-old plantation of red and Scotch pines on Muskingum County spoils shows that under certain conditions pines can be grown successfully.

Location:

This planting is easily found by following State Highway 75 about 5 miles northeast from Zanesville; it lies just east of the highway.

History of the stripping and planting:

Mining of the #6 or Middle Kittanning coal vein was finished in 1918. The overburden removed was quite shallow, having a maximum of 20 to 25 feet. The spoils were not graded; individual piles and banks are a mixture of marine shale, sandstone, and soil, probably having an original reaction of slightly acid. The last cut was left as a lake, presently having a meandering length of about one-fourth mile and a width of 20 - 25 feet.

In 1936, red pine was planted on the whole area of about 15 acres. A few black walnuts were planted at the same time along some of the small valleys in the central part of the area. About 1939 Scotch pine was planted in places where red pine survival was low. The area is now about 90% covered with pines and hardwoods.

Observations:

Nine red pine trees that were considered representative of the whole stand were measured. Yearly height growth was determined from whorl measurements. The results are tabulated below:

	Tree No.									All
	1	2	3	4	5	6	7	8	9	
D.B.H.	5.9	4.2	7.5	3.8	3.6	3.5	6.0	6.2	6.0	
Total Height	26.0	20.9	26.0	20.0	18.5	23.8	26.6	26.5	22.0	
Mean annual height growth first 5 yrs.*	0.60	0.58	1.10	0.22	0.22	0.50	0.90	1.06	0.74	0.66
Mean annual height growth 6,7, & 8 yrs.	1.73	1.20	1.73	1.17	0.87	1.70	1.87	1.83	1.73	1.54
Mean annual height growth 9,10, & 11 yrs.	1.93	0.93	1.77	1.73	1.37	1.77	2.00	1.93	1.40	1.65
Mean annual height growth 12,13,& 14 yrs.	1.80	1.70	1.33	1.70	1.70	1.80	1.67	1.67	1.47	1.65
Mean annual height growth 15,16,& 17 yrs.	2.03	2.00	1.83	1.53	1.70	1.67	1.67	1.47	1.33	1.69

*An initial seedling height of 0.5 feet was assumed.

The mean annual height growth of 0.66 feet during the first five years is an indication of the early stagnation when compared to the mean growth of 1.63 feet during the last twelve years. Trees 3, 7 and 8, having a mean annual height growth of over 0.90 foot the first five years, maintained the dominance their early start gave them.

D.b.h. measurements of a number of trees selected at random in the area were taken to show diameter distribution of the stand among some of the species occurring:

Species	Diameter Class							Total measured
	1"	2"	3"	4"	5"	6"	7"	
Red pine		7	8	15	8	1	1	40
Scotch pine		1	2	4	5	8	4	24
Black walnut	2	5	5	3				15
Wild black cherry*		2						2
American elm*			1					1
Red maple*				1				1
Total	2	15	16	23	13	9	5	83

* Volunteers