

OHIO AGRICULTURAL EXPERIMENT STATION
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Forestry Mimeograph No. 10

Growth of Planted Norway Spruce in Secrest Arboretum

by

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Among the exotic species of trees that were planted in the Secrest Arboretum at the Ohio Agricultural Experiment Station, Norway spruce (*Picea abies*) has survived and grown well in several locations. A detailed study was recently made of one of these plantings. A report of the measurements and observations made in this planting follows.

This planting which occupies about $\frac{1}{4}$ -acre of ground, was made in April 1913, using transplant stock. The trees were originally spaced at 4 x 4 feet. The soil where they were planted is Wooster silt loam. They have always been protected from fire and grazing. In 1935 a thinning was made removing 80 trees. Again in 1941 the plot was thinned at which time 36 trees were cut. According to the records about 128 cubic feet of wood were removed from the plot by these two thinnings or about 1.4 cords. This would be at the rate of about 5.6 cords per acre.

The results of the recent measurements made on the plot are presented in the table below.

Summary of Measurement on the $\frac{1}{4}$ -acre Plot

Number of Trees	Average Diameter Inches	Average Height Feet	Average Height to 3" top	Volume to 3" top		Basal Area Square Feet
				Cu. Ft.	Cords	
107	7.1	54	33	572.02	6.35	29.425

It is interesting to note that the number of trees on the plot as the result of natural mortality and cutting has dropped from over 600 to 107 and from an average spacing of 4 feet between trees to about 11 feet, and incidentally there is evidence that another thinning is needed now. While the average diameter of all live trees on the plot stands at 7.1 inches at present, the average diameter of the codominant and dominant trees is considerably higher. The maximum diameter found is 12.7 inches. The average annual height growth has been about 1.3 feet.

The quality of the trees is excellent. They are very straight and smooth, with natural pruning well advanced.

The total volume indicated in the table plus what was removed in the two thinnings shows that the average annual growth has been about 70 cubic feet per acre per year, or about .77 cord.

Observations of the natural invasion of various types of plants into this plot disclose that along with such plants as blackberry, multiflora rose, and dogwood, many of the desirable woody species were found. The more important ones found were tulip poplar, white ash, red oak, white oak, black oak, black locust, and black cherry. A few Norway spruce seedlings were also noted.

While there is some evidence of the attack of spruce gall aphid in this and other spruce plantings in the vicinity, it apparently has been pretty free from damage by both insects and diseases.

This planting of Norway spruce along with others in their region that have been studied, is stimulating increased interest in this species for forest as well as windbreak plantings in Ohio. Its good survival and growth, and its excellent quality for sawtimber and poles, tend to convince foresters and other landowners that it is one of the best exotics used thus far. By way of caution however, it should be stated that it requires better growing conditions than the pines.

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Norway Spruce plantation started in 1913 in the Secret Arboretum, Wooster, Ohio.