TOUR OF THE ARMSTRONG FOREST COMPANY EXPERIMENTAL FOREST

This tour of a small part of the Company's forest operations included a view and explanation of the improvements for complete accessibility possible with a system of reasonably short cutting cycles, maintenance of an abundant growing stock as a result of thinnings from the top, chemical girdling, and the system being instituted of establishing crop trees, as well as individual tree marking for girdling.

The tour ended with inspection of the experimental crop tree plot described by E. O. Ehrhart at the Third NEFTIC Conference in 1955. -Ed.

THE CROP-TREE PLOT ESTABLISHED IN 1940

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The biological and economic basis for establishing this experimental plot were covered in my paper at the Ithaca meeting (Proceeding 3rd NEFTIC). In that paper I stated that "Our previous studies of these even-aged stands had shown that the highest rate of current increment occurs during the third and fourth decade of their development following clear cutting. Our basic plan, therefore, from a purely pulpwood management standpoint, has been to make a substantial cut from the top at about the 40-year age class. A minimum cut of 12 to 15 cords per acre is required if the initial operation is to stand on its own feet and give the area a proper degree of accessibility for continuing cycle yields. A cut of this type relieves the stand competition sufficiently that many of the tall, slim, naturally pruned stems continue to live and grow into higher quality trees, instead of being lost by suppression mortality. A cut of this character removes about 66 percent of the merchantable sized pulpwood, but only 15 percent of the stems. Thus the growing stock left is generally comparable to a normal stand just beginning its period of maximum current increment, but with the exception that much of the competitive pressure has been removed. Thus at least four additional cycle cuts for pulpwood, at intervals of 12 to 15 years, are indicated before a newly regenerated stand is required for a new rotation. Such management, we feel, gives the maximum cubic footage of usable material throughout a rotation.

"Even in forest management for pulpwood, however, one has to provide against both shortage and excess of forest yield. Greater forest acreage provides the hedge against shortage. If that increased acreage returns a surplus, then it is desirable to have that surplus in high-grade timber for special products returning the greatest value. Such thinking led to the question: why not pick out certain trees, prior to the first cut for pulpwood, with the thought of carrying them through succeeding cycles, so that they would have the quality and size desired in the event they proved to be surplus over pulpwood needs?"

It should be emphasized that very few of the crop trees as originally selected were the fastest growing ones. Invariably the stems of largest diameter had developed the form of a "wolf tree" so that quality growth in the future was limited or precluded.

So we established this 10-acre crop-tree plot in 1940. In 1950, two of these ten acres were used for a cherry regeneration test; everything, except the marked crop trees, was removed. On the remaining 8 acres the second 15-year-cycle pulpwood cutting was initiated in the summer of 1954 by chemical girdling. This second cut yielded 9 cords (900 cu.ft. peeled wood) per acre.

The growth response of the crop trees to the initial 1940 release is apparent from the following tabulation:1/

		1940		1945		1950		1955	
		No. Trees	B.A.	No. Trees	B.A.	No. Trees	B.A.	No. Trees	B.A.
Black Cherry	Totals	93	34.77 2/	93	55.64	91	72.78	91	87.08
	Av. d.b.h.		8.3 3/		10.5		12.1		13.2
Hard Maple	Totals	115	23.90	109	38.85	109	50.08	113	63.54
	Av. D.b.h.		6.2		8.1		9.2		10.2
Soft Maple	Totals	4	1.16	5	2.45	4	2.68	6	5.26
	Av. d.b.h.		7.3		9.5		11.1		12.7
Beech	Totals	2	0.93	2	1.03	2	1.13	2	1 34
	Av. d.b.h.		9.2		9.7		10.2		11.1
Ash	Totals	3	1.59	3	2.11	3	2.58	3	3.18
	Av. d.b.h.		9.9		11.4		12.5		13.9
All Species	Totals	217	62.35	212	100.08	209	129.25	215	160.40
	Av. d.b.h.		7.3		9.2		10.6		11.7

1/ These data were not distributed at the Conference; they are included here in response to questions asked during the marking symposium.
2/ B.A. = Basal area in square feet.
3/ Average diameter at breast height in inches.

Fig. 3. A section of the 10-acre crop-tree plot on the Armstrong Forest Company Experimental Forest, October, 1955. Crop trees are banded and numbered.

U. S. Forest Service Photo

Fig. 4

Fig. 5

Figs. 4 and 5. Experimental deer fence around the 10-acre crop-tree plot; an experiment aimed at observing natural regeneration when free from deer damage, and at protecting sprouts from black cherry stumps until they have outgrown greatest danger of destructive browsing (2 to 4 years).

The pulpwood used in this fence was cut on the adjacent land. The forest road-system actually makes this fence a "storage" pile; the wood can be truck-hauled directly to the mill during any season of the year.

The preliminary figures on the construction of this "woods-fence storage" indicate that the cost of such protection may not be prohibitive, especially where the normal operation requires skidding or draying the wood to roadside for subsequent truck haul.

U. S. Forest Service Photos