U. S. FOREST SERVICE RESEARCH NOTE NE-15

1963

N

FOREST SERVICE, U.S. DEPT. OF AGRICULTURE, 102 MOTORS AVENUE, UPPER DARBY, PA.

E

COST OF MARKING HARDWOOD SAWTIMBER IN WEST VIRGINIA

Marking trees for felling or deadening was one of the important operations when an economic study of forest-management costs and returns was begun in 1959 on a 600-acre management unit of the U. S. Forest Service's Fernow Experimental Forest near Parsons, W. Va. This is a report on the cost of marking for the initial cutting operation.

Study Area

The virgin hardwoods that originally covered the management unit were cut about 1905. The cutting at that time varied from a clear-cutting to a high-grading operation in which the heaviest cutting was done in the most accessible areas and among the most valuable species. Thirty years later the chestnut died and was removed.

By 1959 the stands were composed of second growth and some old residuals (fig. 1). Volumes in trees over 11 inches d.b.h. averaged 8,700 board feet per acre (International 1/4-inch rule to an 8-inch top inside bark). Species composition varied: upper slopes and ridge tops bore mostly oak, black gum, sassafras, and black locust; lower slopes and coves bore yellow-poplar, sugar maple, red oak, and other associated high-value species. Site quality varied from fair on the ridges to excellent in some coves.

The unit is being managed by simple practical methods to produce maximum continuous returns. The first few cuttings were designed to be combination harvest and improvement cuttings to remove poor growing stock and encourage desirable reproduction while at the same time paying all operating costs. As forest conditions improve, the cutting operations will approach those typical of the individual-tree or group-selection sys-

Figure 1. — Before marking and cutting, the stand on the management unit consisted of second growth and some old residuals from an earlier cutting.

Figure 2. — The X on this old cull indicates that it is to be deadened.

tems. Woods operations are conducted on this management unit the same as they are conducted on the usual commercial job, and the costs of each activity are determined together with any returns from timber sales.

The Marking Job

Marking for the first cutting was done intermittently over a 3-year period on 448 acres of rugged mountain country where slopes ranged mostly from 30 to 60 percent. The objective was to make a profitable sawtimber cut and to condition or improve the residual stand; present plans call for a second marking and cutting in 15 to 20 years.

Most of the volume marked for the first cutting was in old residuals that had been left from the original cutting of 1905. The only trees below minimum sawlog size (11 inches d.b.h.) that were marked were a few black locusts in the 8- and 10-inch d.b.h. classes, which were harvested for posts. Sawlog-size cull trees were also marked—for deadening.

Marking, a one-man job, was done with a paint gun and commercial tree-marking paint. Merchantable trees to be cut were marked with 1-foot-long paint stripes on two sides of each tree; three stripes were painted on some very large trees. Culls were marked with an X on opposite sides of the tree (fig. 2). Because logging was to be done by the Fernow Experimental Forest logging crew, paint spots were not made on the stumps of marked trees for a compliance check. However, the amount of paint and time required to make stump spots are small and have little influence on marking costs.

The marking on each tree was heavier and more conspicuous than on most commercial jobs. We believe that this additional effort and cost are very worthwhile; less time is lost by fallers looking for the next tree, and fewer marked trees are missed. Although most of the marking was done by a forester, some was done by a well-qualified forestry aid.

Results and Discussion

Marking time was computed from the time the marker left the road until he returned to it. All marking areas in the management unit are within ½ mile of a road, so the travel time on foot was low.

A total gross volume of 1,222,000 board feet (2,700 board feet per acre) was marked for cutting. The average size of the trees marked for cutting was 18 inches d.b.h., and 13 to 14 trees were marked per acre. In addition, 3 culls per acre, averaging 16 inches d.b.h., were marked for deadening.

Marking rates varied from about 3,000 board feet per hour in one area to 10,000 board feet in another—averaging about 5,000 board feet per hour for the entire 3-year operation. Variation in marking time was associated with size of trees marked, number of trees marked per acre, roughness of the terrain, walking distance from the road, and season of the year (marking is slower when the vegetation is in foliage). However, the data for this study were not collected in such a manner that the effect of these factors on marking rates could be accurately evaluated.

Sixty-eight quarts of marking paint were used. On the average, each quart marked 18,000 board feet, or 6.6 acres, or about 89 merchantable trees plus about 20 culls. Cost of paint was negligible—about $1 per can,

or less than 1c per tree. And the paint gun, which cost about $16, contributed even less to the marking costs because its purchase price can be spread over thousands of trees.

If we arbitrarily assign a rate of $5 an hour for a forester's time spent in marking (and he provides the paint and gun), then the cost per 1,000 board feet marked would range from about $.50 to $1.70, depending upon marking conditions, and would average about $1 per 1,000 for the entire operation. Considering the fact that marking is one of the most important operations in forest management, this seems to be a modest expenditure.

—G. R. TRIMBLE, JR. and G. W. WENDEL[1]

■

[1]Mr. Trimble, a research forester, is project leader in forest-management research at the Northeastern Forest Experiment Station's research unit at Elkins, W. Va. Mr. Wendel, a research forester, is a member of the research staff at Elkins.