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SEVEN-YEAR RESULTS IN MANAGING A SMALL WOODLOT IN SOUTHERN MARYLAND

In the five Maryland counties south of Baltimore, there are 825,000 acres of commercial forest land. About half of this area is estimated to be in true farm woodlands; that is, in small tracts of 40 acres or so that are part of working farms.

Properly managed, these farm woodlands could contribute to the owners' incomes. Unfortunately, few are under any form of management. Many tracts, even though supporting mature timber, lie unused. Others are exploited by high-grading, or by clear-cutting of all merchantable trees. Moreover, in such unmanaged stands, insects, disease, and severe weather take an excessive toll.

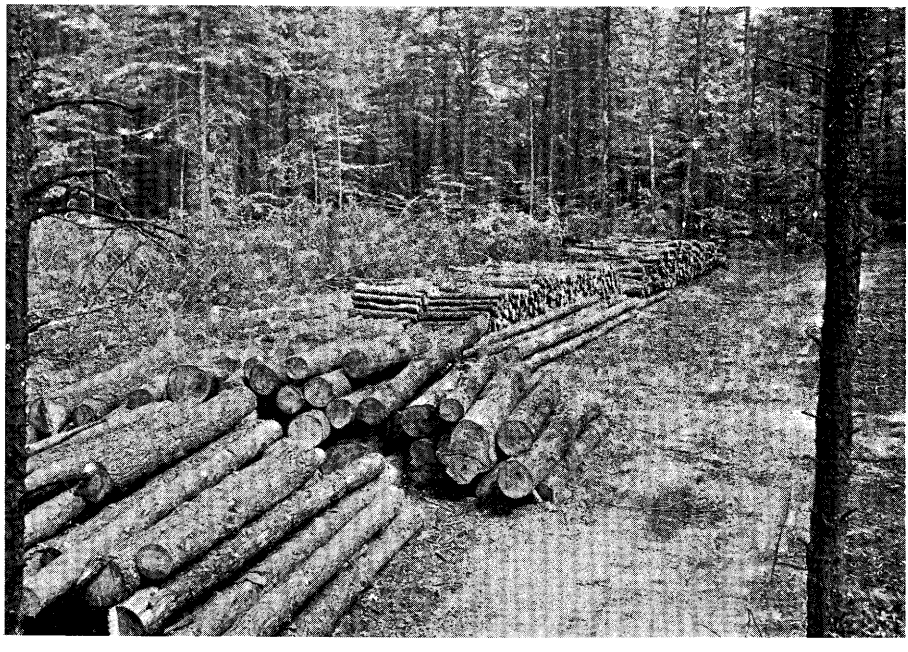
Yet despite past misuse or lack of use, the income and growth potential of southern Maryland's farm woodlands is good. To help demonstrate this fact, the Northeastern Forest Experiment Station in 1954 set aside a 40-acre wooded tract near Beltsville as a farm-woodland demonstration. It was representative of a non-used timber stand. No cuttings had been made in it for at least 40 years; neither had other influences such as fire or storms materially affected the stand. In short, it was reasonably typical of the extensive Virginia pine and mixed hardwood stands of the 5-county area — particularly of stands on poorer-than-average sites.

Three distinct forest types made up the stand: 15 acres in pure pine, principally Virginia pine; 18 acres in pine-oak, mostly pitch pine, southern red oak, and white oak; and 7 acres in pure hardwoods, mostly oaks.

What Was Done

First we had to learn some basic facts about our woodland, such as volume of merchantable timber, composition by species and size classes, and location and area of forest types. These, along with the annual growth rate, were determined. Then a plan of management was prepared. The essence of our system was to harvest annually, or periodically, a volume of merchantable timber about equal to the annual or periodic growth. This was to be supplemented by cultural treatments; these included pine slash disposal and seedbed preparation by burning, control of unwanted hardwoods, planting of pine seedlings, and releasing pine reproduction by weeding.

The silvicultural systems adopted were those that we felt were best suited to managing this woodland. In pure pine, our system was clear-cutting in small patches, based on a 40-year rotation, and supplemented by cultural treatments to reproduce pine in the patches. In pine-oak, our system was selective cutting of about 40 percent of the merchantable



Products cut in 1 year's operation (1954): 3,865 board feet of hardwood sawlogs; 1,795 board feet of softwood sawlogs; 226 lineal feet of pine piling; 77 pine fence posts; 10.1 cords of pine pulpwood; and 7.5 cords of hardwood fuel wood. This first cutting was somewhat heavier than later harvests.

Excellent reproduction of Virginia pine 5 years after clear-cutting a small patch in 1954. Slash was burned in September before seedfall.

volume on a 1-acre block each year, taking the poorest hardwoods first and generally leaving most of the pine for seeding purposes. In pure hardwoods, our system was light selective cutting over the entire 7 acres, taking a few of the larger trees each year, but taking them in groups wherever feasible so as to make larger openings for regeneration.

One final decision remained: who was to harvest the trees and perform the specified treatments? Should we, as a simulated private owner, do the work and sell the products? Or should we take the usual course and sell only stumpage? We already had a 1-man chain saw, a wheeled farm tractor, and miscellaneous small tools; so we decided to do the harvesting and follow-up treatments ourselves, using two men. Most farmers with woodlands either own, or have access to, similar equipment, which we found quite adequate for the job.

The prescribed cuttings and treatments were started in 1954, and repeated annually. The logging job required an average of about 135 man-hours per year, the follow-up treatments an extra 13 man-hours.

What Was Found Out

Each year, a careful record was kept of costs and returns. The volume of all products harvested, and the money received for them at roadside, was recorded (table 1). Labor requirements for the various treatments were kept to the nearest man-hour, and realistic equipment operating costs were charged (table 2). The stumpage values used, which were

Table 1. — Net volume of products cut and sold at roadside, 1954-60

Year	Pine pulpwood	Pine sawlogs	Hardwood sawlogs	Hardwood fuelwood	Pine piling	Fence posts	Peeled hardwood pulpwood
	Units[1]	*1,000 bd. ft.*[2]	*1,000 bd. ft.*[2]	*Units*[1]	*Lineal feet*	*No.*	*Units*[1]
1954[3]	8.067	1.795	3.865	6.000	226	77	—
1955	4.044	.935	2.620	6.990	—	—	—
1956	5.406	2.135	1.140	—	—	—	4.987
1957	5.727	1.015	2.145	—	—	—	3.000
1958	5.687	1.260	1.485	—	—	—	5.344
1959	5.781	.725	1.250	—	—	—	3.500
1960	6.425	—	1.325	—	—	—	3.806
Total	41.137	7.865	13.830	12.990	226	77	20.637

[1] 160 cubic feet each.
[2] International ¼-inch rule.
[3] The 1954 cut unintentionally exceeded annual growth; it was calculated from a preliminary growth estimate that later was found to be too high.

averages of those prevailing in southern Maryland at the time, were: $3 per unit for pine pulpwood, $0.25 per unit for hardwood pulpwood, and $12 per thousand board feet for run-of-the-woods sawtimber.

The costs and returns (table 2) are for the logging operation plus a total of 60 man-hours in chemi-peeling hardwoods for pulpwood from 1956 through 1960. After-logging cultural treatments, averaging 13 man-hours per year, are not included. If done by the owner alone, he could write them off as a time investment only, except for a small outlay for chemicals and hand tools. One person could perform the prescribed treatments — although when burning slash, it would be advisable for two people to be on hand. The 7-year total labor requirements for the cultural treatments were:

	Man-hours
Hardwood control with silvicides	15
Prescribed slash burning	55
Planting pine seedlings	16
Weeding pine reproduction	8

Our inputs, particularly those for cultural work, would not strictly apply to other woodlands. Also, they vary on the same tract from year to year. For example, because of poor seed crops in 1955 and 1956, our pine patch cuttings in those years did not restock well with pine. So

Table 2. — Annual returns, 1954-60

Year	Road value of products[1]	Equipment costs[2]	Net return	Man-hours worked	Returns	
					Per man-hour[1]	Stumpage alone
1954	$318.16	$55.95	$262.21	193	$1.36	$82.45
1955	180.33	37.45	142.88	133	1.07	40.81
1956	219.05	36.10	182.95	133	1.38	49.92
1957	193.73	20.80	172.93	103	1.68	43.64
1958	214.45	47.50	166.95	139	1.20	42.72
1959	166.99	45.85	121.14	136	.89	35.01
1960	160.65	32.40	128.25	106	1.21	28.15
Total	$1,453.36	$276.05	$1,177.31	943	—	$322.70
Av./yr.	$207.62	$39.44	$168.20	135	$1.25	$46.10

[1]Includes stumpage.
[2]Rates charged were $1.50 per hour for the wheeled tractor and $0.50 per hour for the chain saw.

16 man-hours were spent in planting these with Virginia and loblolly pines. Also, time spent in slash burning cannot be predicted exactly; ours ranged from 15 man-hours one year to only 4 in another.

Private woodland owners applying cultural practices such as the four listed above are eligible for cost-sharing payments, ranging from 50 to 80 percent of the treatment cost, through the Agricultural Conservation Program (ACP). And forest planting stock is provided at no cost to Maryland landowners.

Discussion

We have shown that a modest income can be realized each year from a small woodland such as the one on which we worked. Our average net roadside return (including stumpage) was $168.20, about $1.25 per man-hour worked. This man-hour return can be realized where the owner and his helper do the harvesting themselves, the way some forest-land owners prefer to operate. However, if the owner had hired two assistants to do all of the work, say for $1.25 per hour each, it is obvious that there would not have been any return left for the owner at all — not even the return from stumpage; so in a situation like this, where the owner is not able to work on the harvesting operation himself, he would be better off to sell his wood products as stumpage and forego the roadside value.

The other objective of our management demonstration was to increase the volume and quality of the growing stock to the site's maximum capacity. This is a more intangible goal; to actually show that the management system was achieving this objective would require a fairly long time — more than 7 years. But we think our efforts were expended in the right direction. For example, except on some parts of the present pure-hardwood site, we felt the pine should be favored over hardwoods. Fifteen acres were already stocked with mature pine in nearly pure stands. We were able for the most part to successfully regenerate the small clear-cut patches with Virginia pine and to control the hardwood competition at small cost. In the selectively cut pine-oak type, we retained most of the healthy pines as a seed source for pine reproduction. What we did remove were hardwoods that definitely had little growth or quality potential. Finally, in the hardwood type, selective removal of large, dominant, but overmature trees certainly provided needed growing space for the younger hardwood understory.

The management systems applied to the three types represented in this woodland can be tentatively recommended for other farm woodlands having similar types and similar stand characteristics. With other types or different stand conditions, some other approach might be recommended. Professional on-the-ground advice may be obtained from county foresters, consulting foresters, and the Extension Service; and published information is readily available from federal and state agencies. Some of the pulp and paper companies also provide advisory services to local forest-land owners.

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*At the time this study was made, the authors were on the staff of the Northeastern Forest Experiment Station's research center near Laurel, Md., which since then has been discontinued. Mr. Fenton, a research forester, is now serving at the Experiment Station's research unit at New Lisbon, N. J. Mr. Broomall, a forestry aide, is now serving at the U. S. Forest Service's Forest Disease Laboratory at Beltsville, Md.