Columbia County
Timber Harvest
Demonstration Tract
A Progress Report

20 cords annually on 10 acres
This stack of pulpwood is the calculated annual growth on these 10 acres. This amount may be harvested each ten years, but leaving the growing stock of the stand.

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(This publication is OUT OF DATE.)
A woods watched by thousands

A 10-acre forest demonstration tract, near St. Helens, Oregon, has been visited by more people in the Northwest than any other similar tract.

What is it that makes this tract so special?

The Columbia County tract is a publicly owned area set aside solely for teaching sound forest management practices.

Between 1949 and 1957 this stand of 60-year-old Douglas fir trees has been logged six times on a selective basis. The returns from all these croppings have totaled over $5000. On an acre basis, over $500 worth of timber has been removed. The net returns from the sale of timber products amounted to over $3.35 for each hour of labor spent in the tract. This income represents what a farmer would have earned getting out his own timber.

How was it possible to harvest $5000 worth of timber products from 10 acres and have a high quality stand of timber left as a source of future revenue?

Planned management and wise marketing are the answer.

Foresters keenly interested

When management of this stand of trees was first contemplated in 1949, woodland owners and foresters were asking such questions as, "Is this 53-year-old timber too old to manage?"

"Will brush or desirable new trees enter the stand as the older trees become more and more widely spaced?"

In answer to these questions let us take a look at what has happened in this timber tract between 1949 and 1953. Five harvests during this period of time accounted for 39 cords of pulpwood and sawtimber. A re-measurement of timber volume in this demonstration tract made in the fall of 1953 showed a decrease from 92 cords per acre in 1949 before cutting to 67 cords per acre in 1953 after five thinnings. Since five growing seasons elapsed during this period of time, a growth of two cords per acre was made each year by the stand.

The following inventory comparison table shows the results of thinning.
INVENTORY RECORD FROM 1949 TO 1956

<table>
<thead>
<tr>
<th>Year</th>
<th>Trees per acre</th>
<th>Average diameter</th>
<th>Volume (cords per acre)</th>
<th>Annual growth (cords per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>244</td>
<td>12.8</td>
<td>92</td>
<td>2</td>
</tr>
<tr>
<td>1953</td>
<td>122</td>
<td>15.2</td>
<td>67</td>
<td>2</td>
</tr>
<tr>
<td>1956</td>
<td>85</td>
<td>16.4</td>
<td>56</td>
<td>1.7</td>
</tr>
</tbody>
</table>

The above table shows the result of three inventories made in 1949, 1953, and 1956. The first inventory in 1949 reveals that the growth per acre was two cords or 1,000 board feet per acre per year on 244 trees. The second inventory in 1953 shows the same growth on only 122 trees per acre. The third inventory shows only a small decrease in growth. Here is a capital investment decreased by 27%, but still earning a high rate of interest. This has been possible because the more vigorous, faster growing trees have been left untouched. These better quality trees have maintained their diameter and height growth throughout this period. On the other hand, without release, even these better quality trees soon would have shown a decrease in annual growth. In a sense, trees should be treated like milk cows. The healthy, high-producing ones should be kept for the longer period of time.

PRODUCTION RECORD FROM 1949 TO 1956

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume harvested per acre</th>
<th>Net return per acre*</th>
<th>Hourly wage earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1949</td>
<td>9</td>
<td>$65.11</td>
<td>$2.38</td>
</tr>
<tr>
<td>1950</td>
<td>8</td>
<td>73.30</td>
<td>3.00</td>
</tr>
<tr>
<td>1951</td>
<td>10</td>
<td>135.28</td>
<td>2.20</td>
</tr>
<tr>
<td>1952</td>
<td>6</td>
<td>53.97</td>
<td>4.06</td>
</tr>
<tr>
<td>1953</td>
<td>7</td>
<td>76.60</td>
<td>4.18</td>
</tr>
<tr>
<td>1954</td>
<td>No harvest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1955</td>
<td>8</td>
<td>127.65</td>
<td>4.26</td>
</tr>
<tr>
<td>1956</td>
<td>No harvest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* These figures include total net returns from timber and labor.
Records show high incomes

The following table shows the hourly wage earned from six different harvests. Earnings per acre indicate the farm woodland is coming into its own. With income of this type, it can be readily seen how woodlands can contribute to the overall economic structure of the farm enterprise.

Periodic incomes possible

Trees can be a source of periodic incomes for their owners when they are handled somewhat as other farm crops. This frequent income possibility from trees has developed in the past 10 years. Most timber owners continue to think about trees as crops that will produce income once in a lifetime. For this reason the Columbia County Forestry Committee established the timber harvest tract to demonstrate that farmers can earn periodic income on their timber without seriously depleting the growth potential of their stands; secondly, to determine what hourly wage a farmer might earn by working in his woodlot; and thirdly to show that by proper harvest practices woodlands will produce much more and better quality timber than by clear-cutting.

History of timber harvest tract

In 1949 this 10-acre tract of 53-year-old Douglas fir had a total volume of 920 cords of wood or 92 cords per acre. Foresters agreed that it was overcrowded with trees. For the first five years an annual cut of 8 to 10 cords per acre would be made. This would relieve the overcrowded condition of the stand. The remaining better quality trees would then have sufficient growing room to reach their maximum rate of growth.

The aim was to thin out the stand and give more room to the better quality trees. The following types of trees were removed whenever possible:
1. Deformed, broken, and damaged trees.
2. Crowded trees.
3. Occasional “wolf” trees.
4. hardwoods.

Foresters agreed that dense stands of timber should be opened up gradually. If the five years’ cuttings had been combined into one thinning the stand would have been overthinned. The Columbia County Timber Harvest Tract is shown as it appeared in 1950. The tract had been thinned once. The same view of the Columbia County Timber Harvest Tract was taken in 1956 after six thinnings had been made.
A composite view of the three-acre Island Tract in 1957 after six thinnings. The Island Tract is part of the 10-acre Timber Harvest Tract.

The trees to be removed in the first thinning were marked by committee members and foresters. The volume of timber to be cut was advertised for bid to the local farm loggers. The logging was done by horses, farm tractors, or small logging caterpillars owned by local individuals. The loggers kept complete records of all the time spent felling, bucking, yarding, and loading the timber as well as all equipment and operation depreciation, and hired-help costs. These costs show what the income a farmer, who owned the same patch of timber, would have realized had he done the work himself.

Each year's harvest was marked by county forestry committee members in the early spring. The logging was done each year during the summer. Products harvested from the area included sawlogs, poles, and pulpwood. All the products were sold to local markets at the going market price.

The tax picture

As late as 1955 there existed only a land tax on such land in Columbia County. A farmer owning a similar area would have paid the following county taxes up to date (includes fire protection assessment tax):

<table>
<thead>
<tr>
<th>Period</th>
<th>Acres</th>
<th>Tax Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1895-1945</td>
<td>10</td>
<td>Land tax at $.40 per acre</td>
</tr>
<tr>
<td>1945-1955</td>
<td></td>
<td>Land tax at $1 per acre</td>
</tr>
<tr>
<td>1956-1957</td>
<td></td>
<td>Timber tax at 25% assessed valuation at 55 mills</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Land tax at $.80 per acre</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total county taxes 1895-1957</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total net income from sale of timber (before taxes) 1895-1957</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Net return after county taxes ($5,000 minus $388)</td>
</tr>
</tbody>
</table>
Federal and state income figures have not been computed since the 10 acres represent woodland owned by a farmer who may be pursuing other farm activity such as dairying, beef production, growing of grain, or managing fruit or nut orchards. Total farm incomes and returns to the land would of course change the individual's tax picture. This situation will also vary considerably from farm to farm.

The question arises whether this county tax is too great a burden on the woodland owners. Consider the following figures:

Annual growth increase per acre is at least 800 board feet
Gross return at mill for 800 board feet (@ $50 per thousand board feet) $40.00
Present annual timber and land tax for one acre $3.80
Probable logging costs for 800 board feet 19.00 22.80
Net return to woodland owner after deducting taxes and logging costs $17.20

Incomes from the timber harvest tract over the past few years appear reasonably high after tax deductions. It must be remembered, however, that little income can be expected even from a fast growing stand such as this one until it has reached an age of 40 or 45 years. The trees are growing at a better than average rate on excellent farm soil. This combination of high quality land and ready markets for small size material makes intensive management profitable. On the majority of farm woodlands in western Oregon it will be many years before intensive management of this caliber becomes a reality. The day that industry can economically absorb the small log into its operation will be the day that a much greater degree of management can be expected from the farm woodland owner in Oregon.

Continued harvests expected

The timber harvest tract will continue to be managed in somewhat the same fashion as it was in the past. During the next 20 years thinnings in all probability will be less frequent. The trees are well spaced and of even quality and crown classifications. The majority of trees will be left to develop larger crowns and maintain maximum growth.

Future periodic thinnings will decrease the growing stock to a point where annual growth will be around 600 board feet per acre per year. However, the annual gross valuation in wood production still will be around $25 per acre. Previous experience indicates that this point will be reached in about 20 to 25 years for this 60-year-old stand. In all probability, reproduction will be far enough along at that time to permit a clear-cut operation.

A bonus in education

In May 1956 public and private foresters, county agents, and others presented for the first time to all seventh graders in Columbia County a two-hour outdoor forestry program on the timber harvest tract. The school for-
A forester explains seed production and tree planting as part of the annual school forestry tour in Columbia County.

Forestry tour is a method of acquainting a large number of children with elementary forestry in a short period of time. Touring a loop of nine different stations in groups of 20 to 30, more than 400 students heard discussions on: seed production and tree planting, thinning merchantable timber, soil-root relationships, Christmas tree culture, pre-commercial thinning, tree identification, pruning, fire control, and what is "4-H forestry." The last stop on the tour was at the "4-H forestry tent." The stations were several minutes apart with 15 minute lectures given at each stop.

This type of tour is designed to teach young students one or two important points about each of the above mentioned forest practices. Sound conservation is proper utilization of our natural resources as the twig is bent so grows the tree.

Sponsorship

This demonstration tract is sponsored by the County Court, the County Fair Association, and the County Farm Forestry Committee. Through arrangement with the County Court and the fair board, the forestry committee is in charge of all management work.


Direct supervision of the demonstration tract in 1949.

This circular was prepared by Gary H. Sander, Extension Forest Products Marketing Specialist, Oregon State College, in cooperation with members of the Columbia County Farm Forestry Committee.