FORESTRY FACTS

Extension
UNIVERSITY OF WISCONSIN-MADISON

COLLEGE OF AGRICULTURAL & LIFE SCIENCES
UNIVERSITY OF WISCONSIN-MADISON

Department of Forest and Wildlife Ecology

No. 38 **September, 1988**

What Will A Forest Tree Earn?
"Rule of Thumb" for Gauging the Rate of Return

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Have you ever thought about whether a tree should be harvested now or perhaps 10, 20, or 30 years from now? Have you ever wondered if a tree is earning a satisfactory rate of interest? If these and similar questions have intrigued you, then the table and process described in this report should help provide some of the answers. Although these questions involve the use of complicated compound interest equations, the table and assumptions that were used will greatly simplify the process.

The trees in your woodlot may be doing so well that you should let them continue to grow to earn more money and produce more lumber and other wood products. On the other hand the trees may have slowed down to the point where growth is not earning a satisfactory rate of return and a harvest may be appropriate at the present time. Using the table will help you make the right decision.

However, a **PRECAUTION** is needed; your situation may be quite different from that assumed in developing the table. Therefore, use the table with **CARE,** as a "Rule of Thumb" guideline only, not as "hard and fast" information. Read over the following assumptions and precautions very carefully before using the table!

ASSUMPTIONS AND PRECAUTIONS

Whenever any guidelines are prepared, there are always some assumptions involved that require some caution when the guidelines are used and these guidelines are no exception. The following is a list of assumptions and precautions that apply to the table on page 3:

- ► Tree diameter at breast height (DBH) is measured at 4.5 feet above ground.
- ► Usable height increases as DBH increases in 12- to 24-inch trees.
- ► Tree volume is based on a Scribner Volume Table (developed from the Scribner Log Rule).
- ► Tree characteristics assumed in developing the table

Tree Diameter in Inches	Ave. Number of 16-foot logs	Tree Volume in Board Feet
10	0.75	20
12	1.00	50
14	1.25	90
16	1.50	130
18	1.75	190
20	2.00	260
22	2.25	360
24	2.50	470
26	2.50	560

► Trees are assumed to increase in diameter (DBH) at a rate of 2 inches every 10 years.

► The rates shown in the table DO NOT account for the fact that some trees will improve in quality as they grow, or that others may decline.

► The rates shown in the table DO NOT account for any price increases caused by inflation, or improved market demand or decreased timber supply (real price increases).

► The rates shown in the table are real rates of return (compounded annually) in percent.

► Because of the previous two assumptions, the stumpage (standing tree) price for the tree in the future is assumed to be identical to the current stumpage price. Therefore, actual prices are not required to estimate the rate earned changes in volume are sufficient.

► The rates earned apply to an individual tree and therefore may not apply to your entire timber stand. The rate earned for a timber stand can only be estimated by measuring a number of sample trees, and then calculating an average rate. A single tree may have high potential, but the stand may collectively earn a rate of return much different.

AN EXAMPLE

Suppose you are considering a 10-inch red oak tree in your timber stand. Should you harvest it today, or wait 10 years? By consulting the table we can see that by waiting 10 years, when we estimate the tree will be 12 inches in DBH, the tree will earn a real rate of return of 9.6 percent. If we wait 30 years, when the tree is expected to be 16 inches in DBH, the tree will earn 6.4 percent.

If we consider waiting 30 years before cutting a red oak that is now 14 inches in DBH, the expected rate of return will be 3.7 percent.

A Table of Expected Rates of Return

Real Rates of Return Earned Between Now And The Time Of Harvest								
	DBH of Tree When Cut (inches)							
DBH of Tree Now	**12**	**14**	**16**	**18**	**20**	**22**	**24**	**26**
10	9.6	7.8	6.4	5.8	5.3	4.9	4.6	4.3
12	--	6.1	4.9	4.6	4.2	4.0	3.8	3.5
14	--	--	3.7	3.8	3.6	3.5	3.4	3.1
16	--	--	--	3.9	3.5	3.5	3.3	3.0
18	--	--	--	--	3.2	3.2	3.1	2.7
20	--	--	--	--	--	3.3	3.0	2.6
22	--	--	--	--	--	--	2.7	2.2
24	--	--	--	--	--	--	--	1.8

WHEN TO CUT?

By using the above table you can get some idea of a tree's earning power. The table indicates that smaller trees are a good investment if they are left to grow. However, larger trees have less earning power and should be harvested before their rate of return falls below an acceptable level. Just what that level is depends on your management goals and your alternative investment opportunities.

Other factors such as spacing, improving the quality of the future timber, and avoiding large openings that may encourage side limb growth and permit wind damage, should also be considered. Remember, these are guidelines only - before harvesting any of your valuable timber **CONSULT WITH YOUR FORESTER FIRST!**

And finally; this table was based on a number of assumptions, some of which you may feel are inappropriate for your situation. If you would like to find out what happens to the rate when one or more assumptions are changed, obtain a copy of Forestry Fact Sheet No. 39. The charts in that publication allow you to make your own assumptions before estimating the rate of return.