



# NORTHERN HARDWOOD NOTES

## Economic Maturity Of Sugar Maple

How large is an economically mature tree?

The answer usually depends on the return demanded by the owner, generally 2 to 6 percent over 10 years. Under this criterion, the optimum tree diameter for sugar maple may range from 15 to more than 30 inches, depending on grade and growth potential. So, each tree needs to be evaluated individually. The table below will help.

For example, a tree with a butt log grade of 2, expected to grow 1.8 inches in diameter and  $\frac{1}{2}$  log in height over the next 10 years but not increase in grade, would be "mature" when it reached 20 inches in diameter. That is, if the owner required a 6 percent rate of return. If he or she were willing to accept only 4 percent, the tree would not be economically mature until it reached 26 inches in diameter. Although large high-grade trees are worth more than smaller lower grade trees, the rate of return decreases with increasing tree size even though the expected grade, height, and diameter increment may be identical.

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Table 1 .-Economic maturity diameters of sugar maple for selected growth and grade combinations at given rates of value increase

(In inches)												
Butt log grade	Diameter increase (D.b.h. growth--Inches)			Diameter and 1/2 log height increase (D.b.h. growth--Inches)			Diameter and 1 grade increase (D.b.h. growth--Inches)			Diameter and 1/2 log plus 1 grade increase (D.b.h. growth-- Inches)		
	1.4	1.8	2.2	1.4	1.8	2.2	1.4	1.8	2.2	1.4	1.8	2.2
6 PERCENT RATE OF VALUE INCREASE												
3	18	19	21	21	22	24	No grade increase expected <sup>1</sup>					
2	15	17	19	18	20	22	23	24	25 + <sup>3</sup>	26+	26+	26+
1	1	1	1	15	18	20	No grade increase expected <sup>1</sup>					
4 PERCENT RATE OF VALUE INCREASE												
3	22	23	23	27 +	28 +	28 +	No grade increase expected <sup>2</sup>					
2	20	22	24	25	26	28+	28+	28+	28+	28+	28+	
1	16	19	22	24	26	27	No grade increase expected <sup>1</sup>					
2 PERCENT RATE OF VALUE INCREASE												
3	30 +	30 +	30 +	30+	30+	30 +	No grade Increase expected <sup>1</sup>					
2	30 +	30+	30 +	30 +	30+	30 +	No grade increase expected <sup>2</sup>					
1	30	30 +	30 +	30 +	30+	30 +	No grade increase expected <sup>1</sup>					

<sup>1</sup>Maximum rate of value increase for butt log grade 1 trees is 5.6 percent or lower considering only diameter increase.

<sup>2</sup>Because of large diameter.

<sup>3</sup> + indicates that diameter will be higher than indicated but is beyond limitations established for analysis.

<sup>4</sup>Maximum grade considered in present study.