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What is your "effective" rate of reforestation cost?

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If you are considering a reforestation investment, you should be concerned with its effective cost; that is, the cost of reforestation after considering interest and timing of the tax savings and cost-share payments. Effective regeneration costs depend on your interest rate, marginal tax rate, and whether or not you receive assistance from a state or federal cost-share program.

You generally have an option to treat cost-share payments as income, but not always. Understandably, most landowners would choose not to report such assistance as income, and we therefore assume that cost-share payments are not included in taxable income. If you are interested in how to determine whether or not to include cost-shares as taxable income, get a copy of the Internal Revenue Service's temporary regulation 16A.126-0 through 16A.126-2 or the *Forest Farmer* article by George Myles and Mark Goforth (November-December 1983). In the present article, however, we consider only federal income taxes in our analysis.

Let's start by considering investments made at the beginning or end of the year. The timing of the investment in relation to the tax year is important because tax savings from the law are delayed for a year if the expense is incurred toward the beginning of your tax year. For example, if you incur regeneration costs in January 1985, you will not be allowed to claim the tax savings until early 1986. Savings are assumed to be immediate if the investment is made toward the end of the tax year. If you incurred the regeneration costs in December 1984, you could claim the tax savings in early 1985.

Table 1. Calculation of effective reforestation costs for a $10,000 investment at the end of the tax year by a forest farmer receiving 50 percent cost-sharing, with a 10 percent discount rate and a 30 percent marginal tax rate.

Year	Item	Savings	Present Value
0	Cost-Share	$5,000.00	$5,000.00
0	10% Credit	500.00	500.00
0	(1/14) (.95) (5,000) (.30)	101.79	101.79
1	(1/7) (.95) (5,000) (.30)	203.57	185.06
2	(1/7) (.95) (5,000) (.30)	203.57	168.24
3	(1/7) (.95) (5,000) (.30)	203.57	152.95
4	(1/7) (.95) (5,000) (.30)	203.57	139.04
5	(1/7) (.95) (5,000) (.30)	203.57	126.40
6	(1/7) (.95) (5,000) (.30)	203.57	114.91
7	(1/14) (.95) (5,000) (.30)	101.79	52.23
	Total Present Value of Savings =		$6,540.62
	Effective Costs = $10,000 − 6,540.62 =		$3,459.38

Procedure

You can determine effective reforestation cost using only three factors: (1) your interest rate, commonly called "discount rate," or the rate that could be earned in alternative investments; (2) your marginal tax rate, or the percentage tax rate charged on any additional income; and (3) the percentage of costs reimbursed through cost-shares. The method is simple and accurate, and can be applied for any nonindustrial private landowner investing in reforestation, regardless of whether or not a calendar tax year is used.

Please keep in mind that the method requires four assumptions that should apply to most nonindustrial private landowner reforestation investments:

(a) total costs are less than or equal to $10,000 in a single year;
(b) you claim a 10 percent tax credit and amortize 95 percent of the expense;
(c) tax savings are immediate for expenses toward the end of the tax year; and
(d) any cost-shares received are not included as taxable income.

For example, consider a landowner with a discount rate of 10 percent, a 30 percent marginal tax rate, and an opportunity to receive 50 percent cost-sharing. If he invests $10,000 in reforestation, what is his *effective* reforestation cost? We'll assume the investment takes place at the end of the tax year, so that the tax savings are immediately available. Table 1 illustrates the calculating of the effective reforestation cost. Year 0 refers to the present. From the table, we see that he immediately receives $5,000 in cost-sharing, a $500 tax credit, and an additional reduction in taxes of $101.79. He also receives tax savings in each of the next seven years.

Where did the $101.79 come from? The investment after cost-sharing was $5,000. Since the landowner took a 10 percent tax credit, he has to reduce the amortizable basis by 50 percent of the tax credit; this can be accomplished by multiplying the basis by 0.95. He is allowed 1/14 of the deduction immediately because he incurred the expense at the end of the tax year. The landowner's marginal tax rate is 30 percent; therefore, when his income is reduced by $339.29 (since 1/14 × 0.95 × $5,000 = $339.29), his income tax is reduced by 30 percent of that amount (or $101.79).

The present value column of Table 1 takes the 10 percent discount rate into account. Tax savings in years 1 through 7 are

reduced to take interest charges into account. The total of the present value column gives the present value of the cost-sharing and tax savings, $6,540.62 in our example. This means the effective reforestation cost was $3,459.38.

Table 2 allows you to perform the same calculations simply by using the appropriate factor from one of the tables. Table 2 assumes the investment takes place at the end of the tax year (that is, November or December), and the bottom part of the table assumes the investment takes place at the beginning of the tax year (e.g., January or February).

Without cost-sharing. Find the factor that corresponds to your marginal tax rate and discount rate on the appropriate table (depending on whether your investment is at the beginning or end of the tax year). For example, if you make $10,000 reforestation investment in early December (end of tax year) with no cost-sharing, your marginal tax rate is 30 percent, and your discount rate is 10 percent, the factor from Table 2 is 0.6919. Your effective reforestation cost will be $10,000 × 0.6919 = $6,919.

What if the investment was made at the beginning of the tax year, in January? From the bottom part of Table 2 we find the factor 0.7199. The effective reforestation cost would be $7,199. Why is the effective cost $280 higher when planting takes place one month later? This is because the table considers interest charges and all the tax savings will not begin for an additional year.

With cost-sharing. Table 2 needs just one slight adjustment. The factor must be multiplied by (1 - s), where s is the percentage of cost-sharing, expressed as a decimal. In our earlier example, the cost-share was 50 percent, or 0.50. So the factor in Table 2 must be multiplied by (1 - 0.50) or 0.50 (recall the investment was at the end of the tax year in our example). The factor from Table 2 is 0.6919 and when it is multiplied by 0.50, the adjusted factor becomes 0.34595. The effective reforestation cost with a 50 percent cost-share is then $3,459.50 (small error due to rounding).

This easy-to-use method is an alternative to the direct calculation method illustrated in Table 1. For reforestation investments under $10,000 per year, you can quickly determine the effective cost per dollar of actual expense by finding the appropriate factor in Table 2. If cost-sharing is involved, you simply multiply the factor by 1 minus the cost-share percentage. Effective costs demonstrate the degree to which tax incentives and federal and state cost-share programs can affect reforestation decisions. As a forest farmer, you can use these effective cost figures to better evaluate reforestation options. □

Table 2. Present values per dollar of total reforestation expense toward the *end* of the tax year.

Discount* Rate	Approximate Marginal Tax Rate			
	20%	30%	40%	50%
4%	.7338	.6507	.5677	.4846
5%	.7390	.6585	.5780	.4976
6%	.7439	.6659	.5878	.5098
7%	.7486	.6729	.5972	.5215
8%	.7530	.6795	.6061	.5325
9%	.7572	.6859	.6145	.5431
10%	.7612	.6919	.6225	.5532

Present values per dollar of reforestation expense toward the *beginning* of the tax year.

	Approximate Marginal Tax Rate			
	20%	30%	40%	50%
4%	.7441	.6642	.5843	.5044
5%	.7514	.6748	.5981	.5215
6%	.7584	.6848	.6112	.5376
7%	.7650	.6943	.6236	.5528
8%	.7713	.7033	.6352	.5672
9%	.7773	.7118	.6463	.5808
10%	.7830	.7199	.6568	.5938

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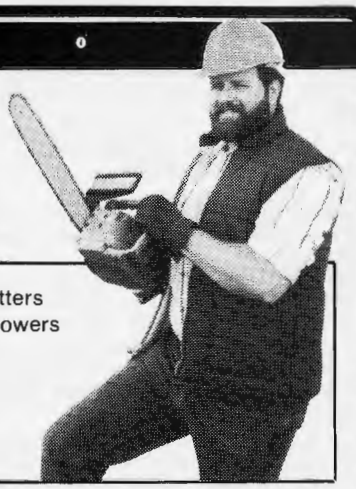

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