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Steven H. Bullard
Stephen F. Austin State University, Arthur Temple College of Forestry and Agriculture,
bullardsh@sfasu.edu

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Reforestation Timing Influences After-Tax Present Value of Costs

Steven H. Bullard

Public Law 96-451 provides federal income tax incentives for reforestation. Taxpayers are allowed an investment tax credit in the year reforestation costs are incurred and deductions of one-fourteenth of reforestation costs on their first tax return, one-seventh on each of their next six tax returns, and one-fourteenth on their eighth tax return. The amount amortized is 95 percent of costs if a 10-percent tax credit is claimed or 100 percent of costs if an 8-percent credit is chosen. The credit and deductions can be applied for up to $10,000 of reforestation costs each year.

Reforestation investments provide landowners with tax savings on eight different tax returns. After-tax present values (*effective* reforestation costs) are calculated by discounting all tax savings to the present with compound interest, and subtracting the total present value of savings from original reforestation costs. Several authors have presented tables for determining the after-tax present value of reforestation costs, based on various interest rates, tax rates, and assumptions about government cost-share assistance (Holley 1982, Kessler and Cody 1984).

End-of-Year Savings

In determining the present value of tax savings for a given reforestation expense, a small bias is created by the timing of the expense within the landowner's tax year. If expenses are toward the *end* of the landowner's tax year, savings on the first year's tax return are assumed to be immediate. Tax savings are discounted for years 0, 1, . . . 7. Holley (1982) includes an example. If expenses occur toward the *beginning* of the landowner's tax year, however, savings from the credit and series of deductions must be discounted for an additional year, since another year must pass before the next tax return is filed. For such cases, tax savings should be discounted for years 1, 2, . . . 8. Dennis (1983) presents an example.

Reforestation timing should be taken into account, since present value differences can be significant if the wrong assumption is made. A 10-percent tax credit will have a present value of $1,000 if $10,000 is spent on reforestation toward the *end* of a tax year, but only $892.86 if costs occur toward the *beginning* of the tax year. Both cases assume a 12-percent discount rate. End-of-year tax planning should reflect potential savings from reforestation investments. The present value of tax savings is *greater* (after-tax present value of reforestation costs is *lower*) if costs occur toward the end of a landowner's tax year.

Calculating the Bias

Present value calculations must include a small bias since standard formulas assume that values occur either at the beginning or at the end of discrete time periods. Tax savings from PL 96-451 can be discounted most accurately by assuming the closest-to-correct timing of costs within a landowner's tax year. In either case, tax savings from the credit and from the first deduction are realized in the same year and should be discounted consistently. Dennis (1983), however, discounted these savings with formulas which treated the tax credit in year 0; yet savings from the series of deductions began in year 1 and continued through year 8. The tax credit and initial deduction occur in the same year and their savings should be discounted from year 0 or from year 1, depending on whether costs occurred toward the end or toward the beginning of a landowner's tax year. ■

Steven H. Bullard is assistant professor of forest economics, Mississippi State University, Mississippi State, MS.

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