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FORVAL for Windows: A computer program for forestry investment analysis

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FORVAL for Windows

A Computer Program for Forestry Investment Analysis

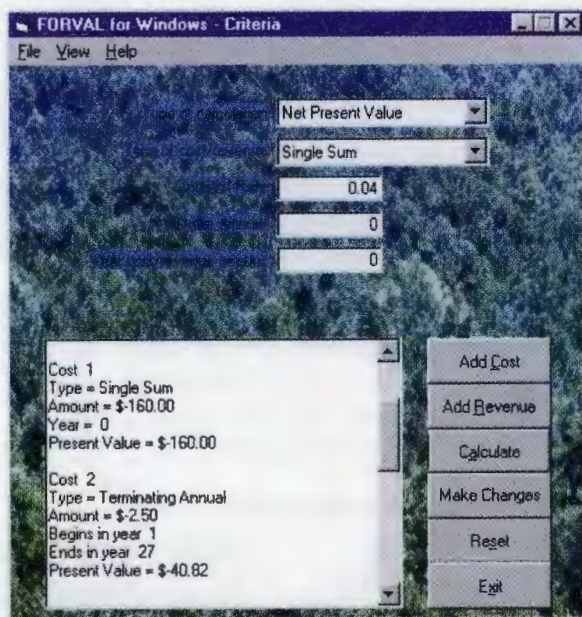
Tom Straka, Clemson University and Steve Bullard, Mississippi State University

FORVAL for Windows is computer software designed to help evaluate timberland and forestry investments from a financial standpoint. It is free and user-friendly—so easy to use that a manual is not required (a Windows Help file is available as part of the program). While professional foresters will find it a valuable tool, it will be equally useful to private forest landowners.

What does the package do? FORVAL has four major subcomponents. The financial criteria option performs all standard forest investment analysis calculations. Another option calculates monthly or annual payments to pay off a loan or to accumulate a sum of money. Precommercial timber valuation is the third option. The fourth option allows for the calculation of a simple projected stumpage price.

Financial Criteria

The program will calculate Net Present Value, Rate of Return, Equivalent Annual Income and Benefit/Cost



Costs and revenues being entered into the program.

Ratio (users have the option to calculate one or all of these criteria). The list of financial criteria also includes Land Expectation Value for the specific case where bare land value is being estimated, and a Future Value option for pro-

jecting the value of a single cash flow at a future date.

A Typical Forestry Investment

Any sort of forest investment problem can be solved with FORVAL. Before illustrating the use of FORVAL, it is instructive to solve a small financial problem on paper. Consider the example of regenerating 40 acres of land with a 4% interest rate (net of inflation). Table 1 shows typical cash flows from such an investment. Single sums occur just once; terminating annual costs and revenues (like property taxes, management fees

Table 1. Cash flow from a typical forestry investment (per acre).

Item	Year Incurred	Type of cost/revenue	Amount (dollars)
Establishment Cost	0	Single Sum	-\$160.00
Annual Management & Tax Cost	1-27	Terminating annual	-2.50
Thinning Revenue	16	Single Sum	97.50
Thinning Revenue	22	Single Sum	156.00
Harvest Revenue	27	Single Sum	1,287.00



Table 2. Calculation of Net Present Value (i = 4%)

Item	Year Incurred	Amount (\$)	Formula	Discounted Value (\$)
Establishment Cost	0	\$160.00	-	-\$160.00
Annual Management & Taxes	1-27	-2.50	$(1.04)^{27} - 1$ $(.04) (1.04)^{27}$	-40.82
Thinning Revenue	16	97.50	$1/(1.04)^{16}$	52.05
Thinning Revenue	22	156.00	$1/(1.04)^{22}$	65.83
Harvest Revenue	27	1,287.00	$1/(1.04)^{27}$	446.35
		Net Present Value		\$363.41

you'd earn exactly 4% interest.

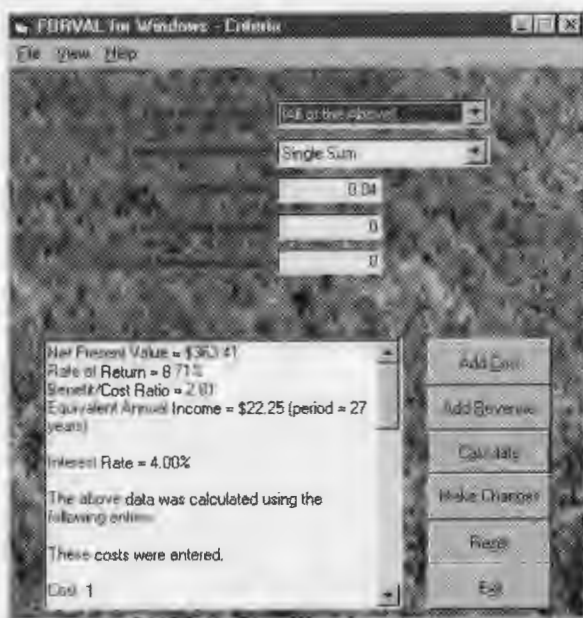
FORVAL does this calculation for you. It also calculates your rate of return (8.71%) and equivalent annual income (\$22.25 per year; that is, the return is equivalent to receiving \$22.25 per year for the entire 27 years at 4% interest). Bare land value is calculated at \$556.37 (you could

pay \$556.37 for this land, and if you planned to grow timber on it forever you would earn exactly 4% interest).

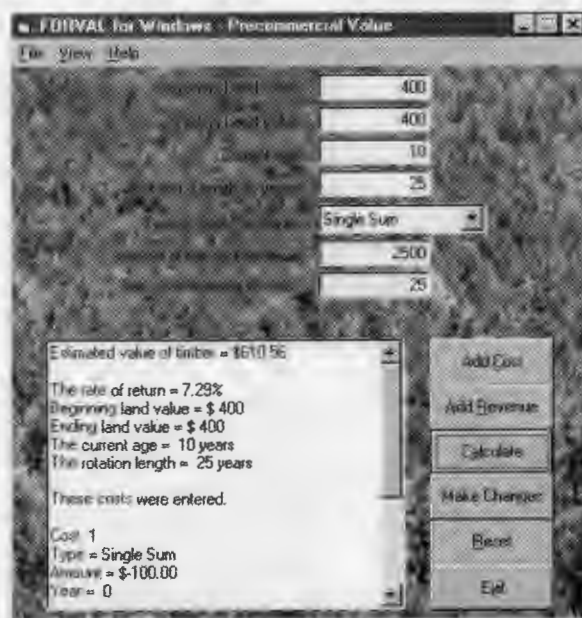
and hunting lease revenue) occur each year and terminate at the end of the rotation.

The basic calculation is net present value. It is shown in Table 2. This

investment has a net present value of \$363.41. This means at 4% interest the investment is worth \$363.41 today; or, in other words, if you paid \$363.41 for the investment and took exactly the cash flows shown in Table 1 over time,



The results: net present value, rate of return, benefit/cost rates, and equivalent annual income (bare land value requires another calculation).



Estimated value of a precommercial stand.

Monthly or Annual Payments

FORVAL for Windows calculates monthly or annual payments to repay a loan or to accumulate a future sum. The program assumes "end-of-period" payments. It applies the "sinking fund" formula for accumulating future sums, and it applies the "capital recovery" formulas for installment payments.

In plain English, what types of payments are we talking about? Basic questions answered are, for example, "If I pay \$25,000 for a truck today, what are my payments over 48 months at 8 1/2% interest?" or "How much money do I need to deposit annually to accumulate \$100,000 in 20 years at 7% interest?". The program also allows the user to print an amortization table (a breakdown of a loan into payments, with each payment allocated to interest and principal).

Precommercial Timber Value

FORVAL for Windows calculates the investment value of precommercial timber using income capitalization methods. The approach involves first calculating the rate of return on a specific timber investment. This rate of interest is then used to compound timber production and land opportunity costs to the current stand age.

The calculation requires inputs of costs and revenues over a single rotation and land cost at the beginning and ending of the rotation. The program calculates a rate of return and an estimated current value for the precommercial timber. The next time you're trying to establish the value of a five-year-old pine plantation, you might want to look up this program.



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