

Economic Methods and Tools

Economic tools and analysis are applied to compare alternatives. Cost effectiveness of potential resource systems is one consideration in the decision process. Any change in methods of operation, inputs, etc. will affect the economy of that unit. Any conservation practice will have an impact on the operation. Therefore, every NRCS conservation planner who provides technical assistance should recognize probable economic implications of the alternatives they recommend.

The initial phase of evaluation on the effectiveness of conservation measures is the collection, analysis, and use of current information on costs and prices. Economic tools are only one of the technical discipline tools applied to provide information to decision makers. There are six economic resource considerations, which are Land, Capital, Labor, Management, Risk, and Profitability. Land, Capital, Labor, and Management can be scarce and must be allocated by the producer. How these resources are allocated affects the outcomes in production and conservation systems. Economic resource concerns need to be addressed early in the planning process in order to produce conservation recommendations that are acceptable and achievable. Follow the guidance in the NPPH to gather needed economic and social inventory data.

Economic methods and economic tools are described in the National Economics Handbook. This handbook is the reference on how to apply economic evaluation techniques to conservation planning.

Simple Evaluations

Most conservation alternatives can be compared using the with and without concept for evaluation. The planner should ask the questions – “What is the cost of the conservation system?”, “What physical effects will take place with the change?”, and “What changes in costs (production inputs) and what changes in output (income) will take place as the conservation is installed?”. Most of the time, a discussion of the answers to these questions with the customer is all the economic evaluation that is needed for the customer to make a conservation decision.

The opportunity to participate in programs can influence conservation decisions. Producers can receive cost share payments for part of the costs. Reasons for participating in farm programs vary, but most producers consider their profits with and without farm programs and act accordingly. If cost share or incentives are available, it should be included in the economic analysis provided to a client.

The first step in simple evaluation is to make an accurate estimate of the costs of the proposed alternatives. These cost estimates should include any cost share that is available. The second step of an evaluation is to measure the physical effects of the proposed systems. Physical effects can be converted to monetary values such as changes in production costs, increases in crop yield, or improved quality. The third step is to look at net returns for each alternative.

The recommended system should represent the most cost effective way to meet the customer’s objectives. Cost effective means there is a reasonable relationship between the physical effects of the system and the cost to achieve it. It is the customer’s goals and values that determine “reasonable relationship” and the customer decides which alternative to implement.

In comparisons of systems or practices, always include “no discounting” scenario by displaying the stream of costs and benefits over time. Also, enterprise budgets, partial budgeting, or conservation effects for decision making worksheets can be used to display the evaluation.

Use discounting as needed to bring values to a common time base, such as average annual cost or average annual benefits.

Average Annual Cost and Benefit

For practices that have a life span over a number of years, the installation cost can be converted to an annual basis to compare to the annual benefit. Amortization converts the installation to an annualized cost to which annual O & M cost is added to calculate average annual cost. Benefits can also be amortized to an average annual benefit. Average annual cost and average annual benefit are calculated to provide a common base for comparison of practices that have different life spans. Amortization can be done with computer programs, financial calculators, or amortization tables. NRCS uses a time period and interest rate selected by the client.

The customer may ask for your suggestions in selecting an interest rate or time frame. One way to select an interest rate is to use one based on the opportunity cost of capital such as the current savings or certificate of deposit rate. This would be a rate that reflects what else could be done with the capital. Because many customers borrow funds for production expenses; the annual operating loan rate can be an appropriate rate to use. Sometimes the average rate of return the business is earning (internal rate of return) can be used. If the analysis is for PL 83-566 Watershed Protection and Flood Protection Program work, there is an assigned discount rate. Sometimes this rate is also used in analysis of other conservation systems. The time frame can be economic or financial life, or some other time frame the customer wants to use. The customer selects the interest rate and time frame, as the analysis is being done for them.

Further details on the effects of time frame and interest rates are in the FOTG reference "Dollars and Sense in Conservation".