

Section V – Effects for Decision Making

Introduction

The purpose of Effects for Decision Making is to provide information on the economic effects of conservation systems. This section includes subsections *which include* Producer Experiences and Other Effects Information *that provide examples of economic effects and impacts of conservation systems.* Information in this section and subsections is to be used to share economic information *as conservation decision support materials when working with customers and as marketing materials* to promote conservation.

Producer Experiences

Producer Experiences *includes Case Studies. These provide* specific information on the application of conservation on a specific site for that landowner. These are from real-world experiences as opposed to modeled results. The information *provided includes descriptions and analysis on* how the conservation system was economically a success or failure for one customer as an example to others considering a similar system. For guidance on case studies and producer experiences, see Section V Procedural References.

Other Effects Information

The Other Effects Information tab contains Economic Effects documents that are not *based on a* producer experience, *but provide economic effects information.* The contents of the Other Effects Information are experimental data from field trials, demonstration sites, and research studies. These materials *are for use in providing economic information that is useful in promoting conservation.*

Using Conservation Effects for Decision Making Information

Effects information from CED (Conservation Effects for Decision-Making), producer experiences, or other effects information provides field office *technical guide users* with a distinct means to improve ongoing conservation planning. CED is one of several economic tools used to gather and display economic effects information to customers. Sharing conservation results with potential cooperators should also promote new conservation planning opportunities and accomplish additional levels of treatment. Even examples of failures can assist others in avoiding similar mistakes as they install conservation.

Effects information is intended to be a relatively quick and practical means of providing potential cooperators in comparable resource situations with a vision of the way their current situation might be modified to achieve a desired resource condition. They are not intended to be definitive analyses of resource treatments, which scientifically determine complete cause-and-effect relationships.

Many end products can be derived from the development of effects information in addition to the case studies or effects for individual customers:

- Brief information **brochures** containing highlights of the resource problems addressed, applied treatments, experienced effects, farmer satisfaction, etc.;
- Brief one-page **information sheets**, modeled after fact sheets;
- **Training materials** for instructing field and district professionals in planning and use of technical information;
- Local news and farm magazine **articles**; and
- Case study farms can be the focus of Soil and Water or Resource Conservation District **tours and training exercises**;

All of these products and uses could be part of public information campaigns and training to illustrate effective ways to evaluate and treat resource problems.

Conservation Effects for Decision Making (CED)

The Conservation Effects for Decision Making (CED) framework is used to provide individual customers information and is used in case studies to capture producer experiences to be used for marketing conservation. This framework encourages the conservationist to draw two pictures of the world: 1) a benchmark condition without conservation; and 2) the conditions that would be expected with conservation treatment. The scenarios are then used to identify the changes between the two conditions. By displaying both the advantages and the disadvantages, the conservationist can show what the conservation treatment means from the customer's perspective.

CED is an optional tool that can be used to assist a customer when they request additional information. CED displays the effects before conservation compared to the effects after conservation and describes the difference between the effects as impacts. If a CED worksheet has been completed for a customer, it would be included in that customer's file along with his/her conservation plan. CED worksheets can also be completed as part of a case study.

To be most useful, the effects information used in CED must be factual, realistic, and practical. CED is a process that helps customers to understand the effects and impacts of resource management systems on their operation. The process helps the planner display the impacts of conservation options when compared to the current conditions as they exist on the decision maker's land. Impacts may be rated by the decision maker.

Conservation Effects vs. Impacts

The difference between "before and after treatment" or "with vs. without treatment" conditions represents the change or impact. The impacts may be all or in part due to the conservation treatment. Change attributable to the recommended treatment is defined as the conservation impact. Effects represent the quantitative and qualitative descriptive characteristics of the outcomes of treatment only. They are the overall results, which provide a general vision of the treatment and its effectiveness. The effects show what a practice or system looks like, its characteristics and results, and represent the general expectations achievable elsewhere if the resource conditions are relatively similar. Several methods for organization and development may be used and a minimum of data requirements must be met to help other farmers understand the consequences of their choice. The data collected in at a minimum must:

1. Be specific for a conservation practice or system.
2. Attempt to hold all variables not related to the conservation treatment constant (this requires careful farmer selection and consultation during implementation to avoid changes in varieties, fertilizer, etc.)
3. Include the kinds, amounts and timing of treatment actions; and
4. Identify the physical and biological effects associated with those actions.

Item number 2 above is impossible to completely control because every year's weather, crop sequence, and methodology of operations will vary. Under certain circumstances, a case study effort could even be rendered useless because of weather, farmer finance, or other induced changes unrelated to the conservation treatment.

How should the information be displayed?

The effects of conservation may be expressed in either narrative terms that represent factual data on experience or expected results of the specified conservation treatment as applied to the resource setting.

For example, typical effects could be: an erosion rate of 2 tons per acre per year or a significant reduction in sheet, rill erosion will occur with this treatment. Effects information will also include management, social, cultural and economic information. Factors such as cost, client acceptability and physical changes to cultural resource sites associated with the specific conservation treatment component are to be identified. Included for example would be: tillage requirements, labor inputs, quantity and costs of inputs, net economic returns, experienced yields, risk management requirements, operation and maintenance requirements, time requirements, cultural resources (archaeological and historic properties), length of life practices, health and safety, aesthetics and community effects.

Information developed and displayed on conservation effects will vary significantly in scope and detail depending on the resource conditions in the local area as well as upon the needs for technical reference materials to carry out conservation activities in that location.

Three levels of analysis

CED can be done at three levels of analysis. Level one is a narrative form. Level two includes physical measurements and Level three includes monetary terms. When doing a CED you can use a mix of impact levels. For example, the impact on soil erosion can be at level two when the number of tons of erosion reduced is displayed while the impact on air quality may be a level one narrative and some other impact could be in dollar values.

Examples of CED

The following pages show an example of a completed CED analysis. *Section V. D. Procedural References* has guidance on how to complete a CED and blank CED worksheets.

Conservation Treatment Effects
Mid- Michigan Cropland Conversion tillage to Residue Management

Resource Setting - Family owned farm, Cash Crop
Crop Rotation: 1-2 year corn, 1 year soybeans, 1 year wheat (subject to market conditions)

CONSERVATION TREATMENT:	RESOURCE ISSUES:
<ul style="list-style-type: none"> • Residue management, No-till -(329 A) • Conservation crop rotation -(328) • Critical area planting -(342) • Grade stabilization structures -(410) • Subsurface Drain -(606) • Nutrient Management-(590) • Pest Management -(595) 	<p>Wind erosion, water erosion, sheet, rill and gully erosion, weed control, low crop yields, surface and ground water concerns, soil compaction, low soil fertility and organic matter content, subsurface drainage</p>
POSITIVE EFFECTS +	NEGATIVE EFFECTS -
<ul style="list-style-type: none"> + Reduced Soil erosion <ul style="list-style-type: none"> • Decreased to 2 tons/acre/year + Improved soil quality: <ul style="list-style-type: none"> • Increase in soil fertility • Increased soil organic matter content by 2% • Increased water holding capacity and water infiltration rates of the soil • Increases Carbon Dioxide in soil, aided to a change in plant bio mass • Reduced soil compaction • Reduced soil crusting • Increased number of night crawlers • Improve yield in drought years. + Improved water quality <ul style="list-style-type: none"> • Reduced sedimentation up to 7 ton/ac/yr + Sustained soil tilth and crop production resulted in increased yields on average. <ul style="list-style-type: none"> • corn from 100 to 150 bu/yr. • soybeans from 25 to 45 bu/ yr. • wheat from 50 to 100 bu/yr. + Reduced equipment and Labor needed <ul style="list-style-type: none"> • at most 3 trips with the equipment is needed + Reduced pesticide use <ul style="list-style-type: none"> • Discontinued and replaced atrazine from 4lbs/ac/yr to 0 • Saved approx. \$50 lbs/ac/yr 	<ul style="list-style-type: none"> - Reduction in crop yields at start of practice <ul style="list-style-type: none"> • 3 year lag to get yields back up to normal or above • \$ loss of income with low yields, especially in the first year - Social pressure at the start of the practice because no-till was not well received in 1988 - Increased cost for Grade Stabilization Structures and other practices - Machine Transition Costs to purchase and outfit no-till equipment <ul style="list-style-type: none"> • Purchase price + cost to modify a no-till planter is \$500 to \$600 a row • Started with 6 row now has 8 row after modification • This was a minor negative for this farm. Machinery expenses may be higher depending on types of equipment selected.