# Section V - Procedural References

## Introduction

The purpose of this section is to serve as a source of appropriate procedures and methods for collecting, analyzing, and displaying conservation effects data with *CED*, Case Studies, Producer Experiences, *or other economic analysis developed.*

## Producer Experiences

**What are producer experiences?**

Producer experiences are case studies or other documentation of the data on conservation effects that were developed by observing and documenting the experiences of land users. Typically, conservationists will make observations of conservation treatments applied by one or more land user and record the effects. This data is recorded in conservation *assistance notes on form NRCS-CPA-6*. Effects information may also be available from conservation field trails, university research plots or other field demonstration sites. They are not mandatory nor are there any required formats that must be followed. Producer experiences are simply another planning tool – perhaps one of the most practical for improving our planning, for prioritizing assistance, and for reaching out to new farmers.

Case studies are one way of describing a producer's before and after treatments of resource conditions. Case studies are individual studies from representative resource problem situations may be used to complete the Conservation Treatment Information worksheet. The conservation treatment information worksheet should be stored in the Tech Guide, Section V, titled "Producer Experiences" for use in future planning efforts and training activities. Case studies are used to evaluate the effects of conservation and should contain neither the degree of detail nor the rigor of analysis used in university level case studies. However, they should be much more insightful than casual observation and help us gain a better understanding of the ecological implications of change from current production systems based on conservation treatments. *Blank worksheets in* this section illustrate formats that may be used. Sometimes the Conservation Effects for Decision Making (CED) tool is applied and the results displayed in the CED format.

*The outline for a conservation treatment information sheet can include these major headings with a brief description. Photographs and quotes from the producer are also helpful. The sections of the information sheet can include:*

1. *Resource Setting: such as headquarters*

**Potential problems to be aware of with Producer Experiences and Case Studies**

Attributing change to a conservation treatment is potentially the most complex and uncertain aspect producer experiences. Researchers do not like to predict results based on only one example. In fact, this is a weakness of using this approach to predict the effects and impacts of conservation work.

However, that weakness does not destroy the usefulness of the approach. Examples of the potential problems with case studies that could complicate our understanding of the effects of conservation are:

- Variability in weather conditions, time of growing season the study is done, e.g., unusually low rainfall could cause yields to be lower that the levels expected with the planned conservation system.

- Other changes in addition to the conservation measures such as a change in varieties planted, fertilizer used or as a result of lessons learned during implementation e.g., modifying tillage depth or timing.

- Measurement errors with respect to inputs outputs or both;
- Lack of control situation used for comparison;
- Some other factor might change between before and after treatment observations, e.g., biological or chemical changes in the soil which might solely be a function of time and be unrelated to the treatment, and
- Significant statistical variation with respect to yields or any other measurable outcome can occur which may or may not be related to the treatment.

Paying close attention to details, objectivity in planning and collecting "after treatment" data, and experience in conducting such studies will help minimize errors.

In addition, data collected over several seasons will tend to minimize the impact of years with unexpectedly low or high responses to treatment.

Above all, you need to make it clear to subsequent farmers that *the results* achieved on one of *farm are an example of what* we feel reasonably certain *can happen and feel that* comparable changes could be achieved. The exact magnitude of change most likely will be different, but should fall within some reasonable proximity to the case study results.

**Producer Experiences are recommended**

Examples of what happened for a producer are highly recommended as planning and public information tools. Conservation treatment information can come from a variety of sources such as university research, conservation field trials, and the expert knowledge of experienced planners within and outside of our agency as well as from case studies.

Some conservation practices and systems are so simple or easily understood that most farmers will not need additional information to reach a decision. Also, mandatory local *or state* ordinances regarding certain land use activities may require specific practices such as filter strips adjacent to water bodies or nutrient management plans. While producer experiences might be very desirable in these situations, they *may not be needed.*

The incorporation of conservation effects information into the FOTG is a long-term, on-going endeavor with producer experiences being one effective means to develop representative effect information to aid customers in conservation decision making.

Most producer experiences should be a record of what happened under certain stated conditions when conservation treatments were applied. A producer experience need not be approached as a complex research effort requiring explicit hypotheses, research design, and statistical tests of significance, but each of these concepts could be considered and use.

Planners should begin by thinking about the resource base in their area (county resource and land-use situations). Ask, "What resource settings are dominant in this county and what are the main associated problems and opportunities?"

Answering this question will help you develop a strategic view of the area and will direct efforts to situations where the needs and opportunities are greatest. Some basic county level resource and land-use data will facilitate the initial part of the producer experience development process.

Once the dominant crop/livestock and resource settings for your county are identified, predominant treatments can be identified and aligned with the land-use situations. Then priorities can be established for developing producer experiences.

The key to success is to select resource situations with a broad applicability to many land-users, i.e., the studies should be developed for major resource concerns on soil mapping units and in resource use situations that represent a significant portion of the resource users in your county.

This data and your understanding of the resource condition, conflicts in use, current trends, and expected future changes, can be viewed along with knowledge of the socio-economic groups in your area to select subjects and farmer candidates.

**Selecting the Farmer**

A cooperative, knowledgeable farmer is one of the most important elements for a successful case study or producer experience. If the cooperating farmer is a respected member of the community, you will have an easier job of convincing other farmers to accept the results. Studies show that a farmer's most respected source of information about new crops, practices, and technologies is other farmers. If you can cite results obtained on the farm of a respected local resident, you will have satisfied one of the key concerns of most farmers. For more information on adoption theory see the National Sociology Handbook. For new and untested technology, an innovator is probably the best prospect.

**What information needs to be collected?**

Conservation effects information will typically include the resource setting (i.e. soil, slope, etc.), the specific conservation treatments applied, the kinds, amount and timing of actions undertaken by decision makers in their operations and the expected outcome in terms of solving resource problems and meeting social, cultural and economic objectives.

Documentation for a producer experience can be conducted as part of your ongoing conservation planning work with little extra time needed during your review of the farm operation and while developing and evaluating alternatives. Additionally, follow-up evaluation is needed after the conservation plan has been implemented. It will serve to verify or reject planning expectations and the results that the decision-maker hoped to achieve.

Sometimes, planning notes from an existing conservation plan might contain all or most of the information needed to produce a good producer experience document. However, for best utility, you will need to structure the information to include data on the kinds, amounts, and timing of actions taken to implement conservation treatments.

The degree of detail and selection of input and output factors to collect data for, should be guided by common sense and professional judgement. For example, the conservationist can ask themselves the question: "What should I observe in order to gauge results and judge "*successes*?" Such efforts will help prioritize system variables and streamline data collection and analysis.

**Alternative types of producer experiences**

Producer experiences can be bases on:

1. a comparison of the "before and after treatment" conditions on a single farm;

2. a comparison of two separate, but comparable resource and land use situations on different farms or even on the same farm, i.e., one site " with and one without treatment"; or

3. a simple recording of the results a farmer experiences "with treatment" on a single site regardless of the "before" treatment conditions.

The first and second alternatives mentioned above require that data be collected *for both the "before treatment" and* benchmark situation (without treatment) and the "after treatment" (with treatment) condition arising from the conservation option adopted.

The last alternative represents the simplest, easiest approach, but inherently has the greatest risk for misunderstanding cause and effect relationships because it focuses on "with treatment" conditions only. Interpreting specific changes attributable to conservation treatments with this method is not as valid as the other two approaches.

This may not matter, for the immediate future, if the optional situation is deemed more desirable than the new cooperators present situation and the adoption of conservation technology is accompanied by the other innovations that were part of the example. However, a more precise understanding of the cause and effect relationships due to conservation is important for our work over the longer term. Indeed, conservation effects and impacts information should result in improvements to Section III guide sheets.

The main advantage of the first two methods for conducting a producer experience is the identification of conservation impacts (change). They also offer another advantage over the third approach. Data from "before and after" or "with and without" treatment helps to assure that all important issues and planning steps have been followed. The conservation effects and associated impacts provide an abundance of information for new clients to begin evaluating the appropriateness of the case study to their specific situation and then build their own conservation plans.

In summary, the results of any producer experience must be described within a context, which identifies the resource situation and the actions, and timing of those actions taken to achieve expected treatment outcomes.

**How do I handle multi-year rotations?**

Information from each of the years of a multi-year rotation must be collected and kept separate. If a multi-year rotation is the conservation option you are evaluating, and you want to compare it with a continuous crop benchmark condition, then you will need to do some summarizing and averaging over those years to make comparisons.

Some planning assistance form the area or state office may be needed for producer experiences. The point to remember is that you must collect the information regarding the kinds, amounts and timing of actions and the resulting effects for each year of the treatment rotation that is different from the benchmark or "before treatment" condition.

**Producer Experience or Case Study Guidance Summary**

1) Select priority resource problem.

2) Select typical resource use system: Crop rotation and/or livestock enterprise. Benchmark or "before treatment" resource and land use situation, problems or opportunities.

3) Select cooperative land user.

4) Describe the benchmark or before treatment resource and land use situation, problems and opportunities. Include soils crop rotation, etc. in describing the benchmark.

5) Describe the client's objectives, concerns and understanding of their resource condition and the outcomes they desire.

6) Describe the treatment in terms of what was changed in kind and amount of inputs and the timing of actions.

7) Describe the conservation effects relevant to the resource concerns and on-going farm operations. The effects measured will be physical and biological effects. Dollar values for the effects might also be included.

8) Add comments on other observations, lessons learned or information gaps and research needs.

9) File final case studies in FOTG, Producer Experiences.

**Developing Producer Experiences or Case Studies in a Group Setting**

One of the most productive ways to develop materials is when a group of employees within a specified geographic area work together. Group interaction could greatly facilitate development of producer experiences or case studies and training in their development and use.

In order to gain the most from group interaction, resource concerns or land use could either be assigned so that all participants work on the same resource/land use situation or on completely different situations. Working individually or in small groups would facilitate a broader understanding of multiple situations and avoid duplication of efforts.

**Summary and Conclusions**

Gathering data to document a producer experience or conducting case studies should not require significant efforts beyond normal conservation planning activities. Properly structured, they will provide more insights on actual results from conservation treatments experienced by producers in your area.

These insights will improve your knowledge of the outcomes experienced by farmers. Therefore, you will be able to express your recommendations for treatment in a more credible manner because of greater "product" knowledge and understanding. Farmers will recognize this expertise and your effectiveness will increase accordingly.

You will also be better able to apply "Professional Selling Skills" and other conservation marketing concepts to identify and target priority resource problems and potential cooperators.

Producer experiences will also help build a permanent record of treatment results that are very useful for selling conservation and that won't disappear as employees retire and transfer. They should also serve technology transfer purposes when shared between field offices and with other interested parties. The information enables planners with various levels of experience to have access to the knowledge of the best.

Finally, going through the process of developing and evaluating a producer experience, case study, or CED worksheet could be an excellent training exercise for new employees to refine their knowledge of planning and to enhance measurement skills and use of the predictive models.

# Example 1 Format for Producer Experience – Case Study

**New York Case Study: Experiences with No-Till Corn**

The case study compares conventional planting and management of corn with no-till planting and conservation management in a corn hay rotation. (May 1990)

| **Before (or current) condition** | **After (or option) condition** | **Impact** |
|---|---|---|
| Corn 3, Hay 7 | Corn 3, Hay 7 | No impact |
| Soil loss – 7.1 tons/acre/year | Soil loss – 4.1 tons/acre/year | Reduced loss – 3 tons/acre/year |
| Soil loss caused offsite damage | No-till kept soil on field | No-till eliminated runoff damage to newly seeded fields or hay lots |
| Time to plow, pick rock, fit field, spray, plant in sod: 33-37 hours | Time to spray, plant: 9-11 hours | 22-28 hours saved; use for dairy management, for leisure time |
| Time to plow, pick rock, fit field, spray, plant in corn: 25-27 hours | Time to spray, plant: 7 hours | 18-20 hours saved; use for dairy management, for leisure time |
| More tractor fuel used | Less tractor fuel used | Savings on fuel costs |
| Corn Yield: 100-120 bushels/acre | Corn Yield: no noticeable difference | No impact |
| Some soil compacting noted | Reduced soil compacting | Better root development, corn shows less signs of stress in drought |

# Example 2 Format for Producer Experience – Case Study

**Resource Setting:** *describe here the soil types, water concern, and other information about the resource*

**Benchmark Management System:** *describe what is being produced and how it is being produced*

**With Treatment Management System:** *describe what is being produced and how the practices are applied to alter the production system*

| **Benchmark Actions** | **Benchmark Effects** | **Treatment Actions** | **Treatment Effects** | **Impact Pluses** | **Impact Minuses** |
|---|---|---|---|---|---|
| *current actions* | *current effects* | *what treatment is* | *effects expected with treatment* | *what the customer sees as good about the treatment* | *what the customer sees as negative about the treatment* |
| *example: continuous grazing* | *example: overgrazed*<br><br>*low digestibility* | *example: prescribed grazing move every 3 days* | *example improved feed value per acre* | *better rate of gain and better cow condition* | *extra labor to move animals* |
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