

CHAPTER 2

CHAPTER II - BASIC CONSIDERATIONS AND
ECONOMIC PRINCIPLES

INTRODUCTION

This chapter deals with defining and illustrating economic principles and procedures which can contribute to efficient conservation planning and effective decisionmaking. Emphasis is placed on the identification of basic effects for purposes of comparison and selection. A secondary purpose is to define levels of sophistication in analysis and incorporate consideration of factors which significantly impact the relative attractiveness of alternatives to decisionmakers. Contents of this chapter are based on the belief that economics is inseparable from planning and that the role of economics, like planning, is ultimately aimed at providing responsible information which allows landusers to make informed decisions about: 1) what to implement and 2) how to implement.

FUTURE CONDITIONS, WITHOUT AND WITH CONSERVATION

The need for conservation planning is based on the premise that some physical situation, such as erosion or yield level, is currently, or is expected to be, at a condition that is undesirable or unacceptable. The effects of present and future situations without taking any action should be compared to those expected with implementation of an action. The difference between the without and with action conditions is the measure of change.

Estimating effects into the future is important; they should neither be overstated nor understated and must be made with reference to time. Consider an example where current mismanagement of resources is causing accumulation of salts in surface soils. Without change in management, continuing accumulations are expected to have a damaging effect on crop yield (line AB in Figure 1).

With adoption of a resource management system, salt which has accumulated in surface soils will be reduced and crop yield is expected to increase, (line AC in Figure 1). The yield change effects due to adoption of

the resource management system is the area ABC when evaluated over the 25 year period. If additional labor is the only cost of implementing the resource management system and yield change is the only gain, determination of the relative worth of adoption is made by comparing the value of the yield gain against the cost of additional labor.

Estimates of future conditions without and with treatment are commonly made by using an inventory of current conditions as a beginning point. Then historical trends are projected while considering current relationships and foreseeable developments (line AC and AB in Figure 1). Projections should reflect the views of the decisionmakers, research, and other published data such as soil surveys. Most importantly, expectations of future conditions without and with treatment must be tempered by local judgment.

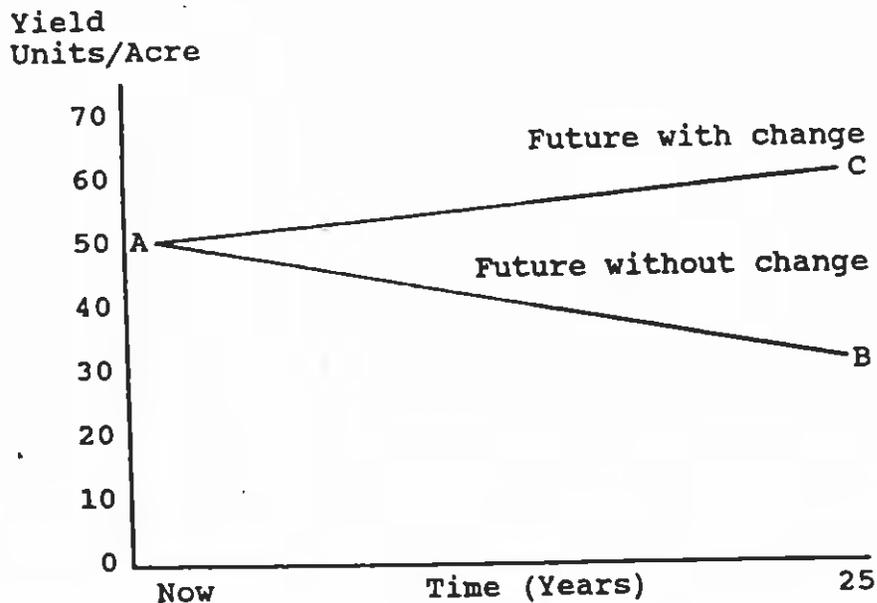


Figure 1. Future conditions, without and with conservation.

DECISIONMAKING

Effective conservation planning must have involvement of both the planner and decisionmaker. The decisionmaker must identify the important physical and/or economic factors which should be examined for change between expected future without and with

conditions. In addition the decisionmaker must also identify the relevant time horizon.

Ultimately, the decisionmaker must also place relative value on the gains and losses in order to determine their individual weight in the choice.

Balancing gains against losses in decisionmaking often involves comparing factors which are not compatible in kind, place or time. Some effects may have a common denominator, such as a market price, while others do not. Wildlife availability and landscape appearance are two examples where commonly held absolute values do not exist.

LEVELS OF DETAIL

Assistance is normally provided up to the point where landusers can comfortably make an informed decision leading to conservation actions. The kind and amount of information will be different for every individual and every situation.

The simplest level of evaluation may consist only of identifying the most obvious physical impacts stemming from the problem and estimating the costs of the conservation practices which address these problems. A vast majority of the questions posed by owner-operators can be answered with this approach.

An intermediate level of evaluation could be used where more specific questions on the resource problems require more detailed answers. The Chapter on Evaluation Techniques will discuss these options at length.

Where an individual cooperators requests an advanced level of analysis, field personnel involved may need to request direct assistance from a State Office staff economist.

PERIOD OF ANALYSIS OR PLANNING HORIZON

Two analytical concerns in decisionmaking are determining the length of time over which effects are considered and converting these effects to a common time basis. The length of time over which effects are considered is called the period of analysis or planning horizon. The decisionmaker is responsible for

identifying the planning horizon. General factors affecting the decisionmaker in the determination of planning horizons are: age of the cooperator, intergeneration transfer (whether the children will farm), etc. Economic factors which determine the period of analysis include physical deterioration of capital investment (i.e., farm equipment, conservation practices, etc.) and obsolescence due to improvements in technology. The planning horizon may exceed the economic life of the alternative. However, if the planning horizon is shorter than the economic life of the alternative, care must be exercised to account for the benefits which will accrue beyond the period analyzed, and any costs which may be recoverable at the end of the period.

LEAST COSTLY ALTERNATIVE

From an economic viewpoint, any conservation practice selected for installation should satisfy the requirement that it not be more costly than any reasonable alternative means of accomplishing the same specified objective. Comparison of costs for all alternatives considered is essential and should include the estimate of operation, maintenance and replacement expenditures in addition to the annual installation costs. Any costs occurring in the future need to be identified and converted to a common time base.

MAXIMIZATION OF NET INCOME (PROFIT)

The optimum scale of economic output from application of conservation practices is the point at which net income is at a maximum. This occurs when the income added by the last increment of input is equal to the cost of adding that increment. The increments to be considered are those smallest units in which there is a practical choice as to inclusion or omission from the proposed package of conservation practices. This process is best described as equating the marginal returns (income) and the marginal costs (expense).

