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Conservation Practices for Landlords

There is growing concern over the possible impact of rented land on soil conservation. Concerns regarding conservation practices are not new; however, the recent increase in concerns has come about for several reasons. More than half of Iowa's farmland is rented and operated by someone other than the owner. In addition, landowners are aging and therefore are less likely to be actively engaged in farming. The general assumption people have is if a farmer does not own the land they farm, they are less likely to have an incentive to use conservation practices.

Many landlords want to use conservation practices on their land but are unaware of their options and how to implement the practices. This publication is designed to expose different operational and permanent conservation practices that can be implemented.

Most conservation practices are put into place to decrease soil erosion. Erosion is the wearing away of soil and rock, and removal of top soil. Sheet and rill erosion occur on sloping land with little ground cover. Sheet erosion happens when water removes even layers of top soil. Rill erosion occurs when water makes channels up to 30 cm deep. Gully erosion happens when water makes a deep channel that washes away soil when it rains. The soil can wash into nearby creeks and streams causing disruption in quality and the flow of water. Wind can pick up and remove top soil if it is in a dry area not secured by plants or overgrazed.

Runoff from a heavy rain carries topsoil from unprotected, highly erodible soils in northwest Iowa.

Loss of top soil due to any of these situations has both short and long-term effects. The top soil is the most fertile part of the land with the most nutrients for growing crops, and it takes up to a thousand years to develop one inch of new topsoil. This publication describes some of the numerous conservation practices that can be implemented by a landlord to protect and conserve assets.

Soil erosion is not the only concern when it comes to protecting and conserving land. Water quality protection, wildlife habitat preservation, recreational development/maintenance, nutrient and pest management are a few other factors that play a role in conserving land.

Severe sheet and rill erosion on highly erodible soils in southwest Iowa.

Topsoil blowing in the wind in north central Iowa.

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During an evaluation of what conservation practice to implement, many factors and questions need to be consider. Are you considering a single practice or a group of practices? What are the costs of the conservation practices and does it fit into my budget? There are more questions that must be asked, but the most important question is why do you want to implement a practice? What is your goal?

We will return to these questions, but first it is necessary to illustrate and describe the different practices.

There are two main categories that conservation practices can be divided into, operational and permanent. An operational conservation practice is a short-run practice that can be implemented on a year-by-year basis. The practice can be used one year and not the next. A permanent conservation practice is a long-run practice that will be in place once it is implemented until it is removed or altered. Some conservation practices may fall under both categories depending on the circumstance.

Operational Conservation Practices

Contour Buffer Strips

Definition: Narrow strips of perennial vegetation established across the slope and alternating down the slope with wider cropped strips.

Purpose:

Reduce sheet and rill erosion
Manage runoff water and trap sediment
Provide food and nesting for wildlife

Where Used: Most suitable for uniform slopes

Cost: Costs vary widely by location; things to consider include seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of crop production.

Contour Farming

Definition: Farming sloping land (preparing, planting, and cultivating) on the contour and not up and down the slope.

Purpose:

Reduce sheet and rill erosion
Manage runoff water
Reduce fuel consumption

Where Used: Sloping land

Costs: Cost for preparing contour rows is minimal. Considerations include surveying the contour for field layout, and the additional farming and harvesting costs associated with altered field layout and shorter row lengths, etc.

Cover Crops

Definition: A green crop including grasses, cereal grains, legumes or forbs seeded in early fall to protect the soil surface from erosion and reduce sediment and nutrient loss during the “brown” winter months between growing seasons.

Purpose: Hold soil in place over the winter
Suppress winter annual and early-season weeds
Reduce soil erosion, even in no-till
Reduce nitrate leaching, improve soil health and productivity
Increase soil organic matter content
Insect Control

Cover Crops (cont.)

Where Used: Any cropland

Cost: Can vary significantly by cover crop. Considerations include: seed costs, seedbed preparation, drilling/planting, herbicides, equipment usage, harvesting and labor. Additional seedbed preparation or chemical applications may be necessary to kill the cover crop as to not compete with the next cash crop.

Crop Rotation

Definition: Growing different revenue-generating crops in a repeated sequence on the same field.

Purpose:

Reduce sheet, rill and wind erosion
Maintain or improve soil organic matter content
Manage the balance of plant nutrients
Manage plant pests (weeds, insects and diseases)
Provide food for domestic livestock
Provide food and cover for wildlife

Where Used: Any cropland

Cost: Although there are many situations in which continuous cropping can pay, crop rotation generally provides the best yields and crop performance. With rotation, producers can get better control of disease, insects and weeds, and improved soil fertility; long-term crop rotation means increased input efficiency for machinery, fertilizers and chemical usages. Cost considerations include incremental revenue effect of crop rotation (example: corn on corn income vs. corn-soybean growth cycle).

Managed Grazing (Rotational Grazing)

Definition: Managing the planting of forage and using grazing rotations among different fields.

Purpose:

Reduce soil erosion and runoff
Improve forage quality
Improve livestock health
Improve water quality
Increase carrying capacity of the fields

Where Used: Pasture or land used for grazing

Cost: Considerations include fencing costs, water source, seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of row crop production revenue.

Nutrient Management

Definition: Careful management of the amount, source, placement, form and timing of the application of plant nutrients and soil amendments.

Purpose:

Reduce fertilizer cost
Protect water quality
Maintain or improve the physical, chemical and biological condition of soil

Where Used: Any farmland

Cost: Fertilizer and nutrient costs, land application costs, and soil testing costs. Do take into account the incremental yield benefit from proper nutrient management.

Integrated Pest Management (IPM)

Definition: Implementing various management strategies that identify specific pests on specific areas to economically protect the crop.

Purpose:

Reduce adverse effects on plant growth, crop and forage production

Prevent overuse of chemicals

Where Used: Land with agricultural pests

Cost: Concept to reduce the costs of agricultural pesticide application through a series of non-chemical pest management strategies. Costs vary depending on control, programs include: monitoring pests, trapping, introducing predators, selecting resistant plants, using natural biological controls, etc. IPM is frequently used in organic production settings, and it can save money for all agricultural producers.

Residue Management: Mulch Till

Definition: Provides residue management over the entire soil surface prior to planting (spring or fall). Tillage tools such as chisel plows, field cultivators, sweeps or other similar implements are used.

Purpose:

Reduce sheet, rill and wind erosion (compared with moldboard plowing)

Increase plant water availability and water quality

Increase soil organic matter

Provide food and escape cover for wildlife

Where Used: Any cropland

Cost: Economic considerations include additional seedbed preparation, equipment usage, labor, as well as incremental impact on crop yield and nutrient profile of the soil.

Residue Management: No-Till

Definition: Soil and residue is left undisturbed from harvest to planting except for nutrient injection. Planting, drilling or nutrient application is done in a narrow seedbed or slot created by coulters, row cleaners, or disk openers. No full-width tillage operations are done.

Purpose:

Reduce sheet, rill and wind erosion

Improve soil organic matter content and soil structure

Increase plant-available moisture

Provide food and escape cover for wildlife

Where Used: Any cropland

Cost: Saves cost of seedbed preparation, equipment usage, and labor during the spring season. Considerations include incremental impact on crop yield, chemical use and nutrient profile of the soil.

Permanent Conservation Practices

Diversion

Definition: Channel or earthen embankment constructed across a slope generally with a supporting ridge on the lower side; similar to a terrace.

Purpose: Collect water and redirect to a stable outlet

Where Used: Any land where surface runoff water control is needed

Cost: Costs vary widely by location, things to consider include seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of crop production.

Field Borders

Definition: Strip of perennial vegetation established at the edge or around the perimeter of a field. Used with contour or cross slope farming patterns.

Purpose:

Reduce erosion from wind and water
Protect soil and water quality
Manage pest populations
Provide wildlife food and cover
Improve air quality and increase carbon storage

Where Used: Around perimeter of fields

Costs: Considerations include seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of row crop production.

Grade Stabilization Structure

Definition: A structure, typically concrete, built across a drainage way to drop water to a lower level to protect the soil.

Purpose: Prevent gully erosion

Where Used: Land susceptible to gully erosion

Cost: A wide range of alternative types of structures are available: dams, drainage structures, water flow structures, etc. Costs for structures include installation of concrete structure, maintenance needs (repair eroded areas, concrete fixes), seeding vegetation, as well as forgone income of tillable row crop production, etc.

Grassed Waterways

Definition: Areas planted to grass or other permanent vegetative cover where water usually concentrates as it runs off a field.

Purpose:

Slows water and guides it off the field
Prevents gullies from forming

Where Used: Fields with a natural drainage or water path

Cost: Considerations include seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of row crop production.

Riparian Buffer Strips

Definition: Strips of grass, shrubs or trees planted along ditches, streams, wetlands or other water bodies.

Purpose:

Filters nutrients
Traps sediments
Protect water quality
Provide habitat and corridors for fish

Where Used: Near waterways

Cost: Considerations include seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of tillable crop production.

Stream Bank and Shoreline Stabilization

Definition: Treatments used to stabilize and protect banks of streams, reservoirs, estuaries or constructed channels.

Purpose:

Prevent loss of land
Improve or enhance stream
Prevent bank erosion

Where Used: Land near waterways

Cost: Considerations include earth fill, rock, seed costs, planting, construction of rock-based shoreline stabilization, labor costs, as well as forgone revenue of tillable crop production.

Terraces

Definition: Earthen embankment that follows contour of a hillside, breaking a long slope into smaller segments. Often land is formed into multiple terraces, giving a stepped appearance.

Purpose: Reduce rate of runoff and allow soil particles to settle, cleaner water is carried off in a non-erosive manner

Where Used: Farmland with uniform, moderate slope

Cost: Considerations include surveying the contour for field layout, earth moving, seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of crop production. Also take into account additional farming and harvesting costs associated with altered field layout and row length, etc.

Water and Sediment Control Basin

Definition: Earth embankment constructed along the bottom of a drainageway to form a sediment trap and temporarily store runoff.

Purpose:

Improve farmability of sloping land
Reduce erosion
Trap sediment and reduce and manage water runoff

Where Used: Cropland where runoff and sediment are causing damage

Cost: Considerations include earth moving, seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of tillable crop production.

Windbreak

Definition: Rows of trees and shrubs planted around a farmstead, field or feedlot.

Purpose:

Protect from wind erosion
Act as snow fence
Provides wildlife food and cover
Conserves energy used for heating and cooling
Acts as a sound barrier

Where Used: Any farmland

Cost: Considerations include seed costs, seedbed preparation, drilling/planting, equipment usage, labor, as well as forgone income of tillable row crop production.

Setting Conservation Goals

Open communication between the landlord and tenant is vital in order to implement any of the mentioned conservation practices.

The motivation to engage in conservation practices can be different for the landlord and tenant. The landlord is interested in protecting their asset while the tenant might have current income as the most important consideration. Both parties will have different views, but it is important to come to a consensus on some conservation goals. Do you want to prevent rill or sheet erosion? Do you want to provide more habitat for wildlife? Do you want to protect nearby waterways? Be specific with your conservation goals.

Choosing Conservation Practices

After setting common goals, begin planning and deciding what conservation practices will achieve those goals. Use this publication as a tool to help you think about different options for conservation practices that can improve your rented land.

Cost Division of Conservation Practices

A first step in planning for conservation practices is deciding who will bear the costs. Often the conservation practices benefit the landlord, but in certain cases the tenant will also benefit due to factors such as improved yields, easier farming conditions and less potential water damage.

Not all conservation practice costs and benefits are associated solely with the landlord and tenant. Societal costs, such as erosion, are borne by society in general. Costs for cleaning waterways, increased turbidity in the water and nutrient contamination are directly associated with soil erosion, but neither the tenant nor the landlord bears these costs.

The second step in planning for conservation practice implementation is to determine if there are any cost share funds available for the practice. For some practices a considerable portion of the fixed costs can be paid with cost share funds. The amount of funding depends upon the practice. Also, the amount of funds available varies by county.

After the final costs have been estimated, how the costs will be divided between the tenant and the landlord must be determined. This is often where the most difficulty arises. Should the tenant or the landlord pay for the costs of conservation practices? What if the costs were divided and the lease terminated? What is a reasonable time to prorate the tenant's costs? How much would the tenant be reimbursed? There are many questions like these that need to be addressed and specified in the lease.

Economic theory would suggest that whoever bears the cost should receive the benefit. However, this logic does not necessarily apply to cost division of conservation practices. The tenant and the landlord must communicate about the goals and the outcome of the practice.

This publication is a tool to help you consider conservation practices that can improve your rented land. USDA Natural Resources and Conservation Service (NRCS) personnel have information about specific conservation practices and can help develop a conservation plan for the farm. Information about general lease provisions affecting what conservation practices you use can be found in ISU Extension publication "Improving your Farm Lease Contract," FM 1564. Sources of additional conservation practice information include the Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources, the Natural Heritage Foundation and the American Farmland Trust.

References and further information available from:

Iowa Department of Agriculture
Iowa State University Extension and Outreach
National Resources Conservation Services
United States Department of Agriculture

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