

26 Wetland...marsh-type area with saturated soils and water-loving plants. Wetlands provide wildlife habitat and serve as natural filters for agricultural runoff.



How it works

Natural wetlands— swamps, bogs, sloughs, potholes and marshes— occur in every state in the Nation and vary widely in size, shape and type. Sloughs, potholes and marshes in low-lying areas are most common in Iowa.

A wetland may have standing water year-round or may hold surface water for only part of the year.

How it helps

The many values of wetlands are only recently being fully understood and appreciated. Among the benefits of wetlands are:

- Wetlands can provide natural pollution control. They remove nutrients, pesticides and bacteria from surface waters and can act as efficient, low cost sewage and animal waste treatment practices.
- Wetlands filter and collect sediment from runoff water.
- Because wetlands slow overland flow and store runoff water, they reduce both soil erosion and flooding downstream.
- Many wetlands release water slowly into the ground which recharges groundwater supplies.

- All of America's ducks and geese depend on wetlands for breeding, nesting, and feeding habitat. More than 5,000 plant species, 190 species of amphibians, and one-third of all native bird species are supported by wetlands.
- The ecological diversity of wetlands can offer one of the most beautiful and aesthetically pleasing features of a farm.

Planning ahead

- Goose nests, wood duck boxes, and other protection for water fowl and habitat for adjoining uplands may be added to enhance the wildlife and recreational value of a wetland.

Maintenance

- Mostly it's best to leave wetlands alone. They can be enhanced, however, by adding plants or water to a relatively dry wetland.

27 Pest management... evaluating and using a tailored pest management system to reduce crop and environmental damages. Scouting is done to identify insects, weeds and diseases.



How it works

Crops are scouted to determine type of pests—insects, weeds and diseases—and the stage of development. The potential damage of the pest is then weighed against the cost of control. Finally, if pest control is economical, all alternatives are evaluated based on cost, results, and environmental impact. Precaution is taken to keep any chemicals from leaving the field by leaching, runoff or drift.

How it helps

- Scouting and spot treatment for only those pests that are threatening can save money.
- Using fewer chemicals improves water quality.
- Specific treatments for specific pests on specific areas of a field prevents over-treatment of pests.

Planning ahead

- Which soils on your farm are likely to leach pesticides?
- Did you establish filter strips along streams?
- Did you consider pest control alternatives?
- Did you use records of crops and pest control for reference?

- Did you rotate crops to reduce the chance of pest problems?

Tech notes

Following are guidelines to follow for applying and mixing pesticides:

- Complete a pesticide risk assessment of potential environmental damage from leaching or runoff. Consider this information when selecting a pesticide.
- Wear protective clothing when applying pesticides.
- Mix and load pesticides in an area that won't contaminate water supplies; and prevent back siphoning.
- Triple rinse containers before disposal. Burn paper bags.
- Apply pesticides during periods of minimal potential for drift or runoff.
- Use the lowest application rate practical and rotate pesticides.
- Use spot treatment or banding when possible in areas of concentrated pest populations.
- Use proper erosion control.

Maintenance

- Continue scouting to best identify pests and control methods.
- Keep records to track costs and chemical application.
- Calibrate spray equipment.

28 Water and sediment control basin...

a short earthen dam built across a drainageway where a terrace is impractical; usually part of a terrace system.



How it works

An embankment is built across a depressional area of concentrated water runoff to act similar to a terrace. It traps sediment and water running off farmland above the structure, preventing it from reaching farmland below.

How it helps

- Basins improve water quality by trapping sediment on uplands and preventing it from reaching water bodies.
- Structures reduce gully erosion by controlling water flow within a drainage area.
- Grass cover may provide habitat for wildlife.

Planning ahead

- Will basins be part of an existing terrace system?
- Is the site too steep for the basin to work properly or be economically feasible?
- Can adequate outlets be provided?

Tech notes

- The uncontrolled area draining into the basin must not exceed 50 acres.
- Build the basin large enough to control the runoff from a 10-year storm without overtopping.
- Install a tile or infiltration outlet.
- Use fill material free of sod, roots, frozen materials and stones larger than 6 inches in diameter. It should also have correct moisture content for adequate compaction.
- Spacing for water and sediment control basins depends on the land slope, tillage and management system. Consult NRCS for recommended spacing.

Maintenance

- Reseed and fertilize as needed to maintain vegetative cover.
- Check the basin after each large storm, and make any needed repairs.

29 Terrace... an earthen embankment around a hillside that stops water flow and stores it or guides it safely off a field.



How it works

Terraces break long slopes into shorter ones. They usually follow the contour. As water makes its way down a hill, terraces serve as small dams to intercept water and guide it to an outlet.

There are two basic types of terraces—storage terraces and gradient terraces. Storage terraces collect water and store it until it can infiltrate into the ground or be released through a stable outlet.

Gradient terraces are designed as a channel to slow runoff water and carry it to a stable outlet like a grassed waterway.

How it helps

- Both water quality and soil quality are improved.
- Terraces with grass on front or backslopes can provide nesting habitat.

Planning ahead

- Will other conservation practices be used in conjunction with terraces to prevent sedimentation?

Tech notes

- Chisel the parts of the terrace that will be farmed to loosen compacted soil.

- Fertilize and seed according to NRCS recommendations.
- Grassed backslope terraces have a farmable frontslope with a 2:1 backslope (2 foot horizontal to every 1 foot of vertical drop.)
- Narrow base terraces have 2:1 slopes on both the frontslope and backslope.
- Broadbase terraces should not be built on slopes greater than 8%. Farmable slopes should not be steeper than 5:1.
- Terraces are designed to control runoff from a 10-year storm.

Maintenance

- Avoid farming too close to intakes.
- Remove sediment build-up in the channel to maintain the required water-holding capacity.
- Repair sections of embankment which have eroded or have excessive settlement.
- Fill settled or eroded areas in the tile trench.
- Repair or replace damaged intakes.
- Remove sediment build-up and trash from around the intake.
- Control rodents or burrowing animals, weeds, brush and trees.
- Reseed and fertilize as needed to maintain good vegetation.

Cover crop... a close-growing crop that temporarily protects the soil when crop residues are not adequate.



How it works

Crops including cereal rye, oats and winter wheat are planted to temporarily protect the ground from wind and water erosion during times when cropland isn't adequately protected against soil erosion.

How it helps

- Cover crops keep ground covered, add organic matter to the soil, trap nutrients, improve soil tilth and reduce weed competition.

Planning ahead

- Do you have a seeding method that won't harm standing crops?
- Are adequate soil conservation measures installed?

Tech notes

- Cover crops are most often recommended when low residue producing crops such as soybeans or corn silage are grown on erodible land.
- Cover crops need 30-40 days of good growth before the first hard frost. Seeding after harvest will normally not allow cover crops to grow large enough to survive the winter.
- Seed from the end of August until mid-September.

- Cover crops may be air seeded prior to harvesting soybeans and other crops, or seeded conventionally after silage harvest.
- Many crops can be used for cover crops. Cereal rye is common.
- Kill cover crops in the spring. Mowing or herbicide application is acceptable. Tillage is not recommended because it will bury residue. Early kill is important to reduce the risk of depleting moisture needed for the grain crop.
- Follow the NRCS recommended seeding rates for the cover crop you select:

<u>Crop</u>	<u>lb./ac.</u>
Oats	70
Cereal rye	90
Winter wheat	90
Alfalfa	12
Sweet clover	12
Red clover	10
Crownvetch	5
Sudan grass	25
Hairy vetch	30

- Legume cover crops add nitrogen to the soil, providing a low-cost fertilizer for grain crops.

Maintenance

- Cover crops are a short term practice and are not expected to last after initial establishment.
- Restrict grazing if necessary.



Conservation practices blanket the landscape.

Challenges Ahead

Farmers are applying conservation and environmental practices to their land at record rates.

They are protecting water resources by scouting fields for pests, establishing buffer zones of vegetation along streams and creeks and storing animal manure until conditions are right for field application.

They are saving soil by leaving more residues on crop fields, building terraces, and farming on the contour.

Farmers have accepted the challenge of protecting our natural resources and continue to educate themselves about new technologies and techniques as they are developed.

Consider this book as another tool to help you meet the conservation and environmental challenges ahead. Select practices which will help you balance the needs of the environment with your own economic needs and the needs of the hundreds of people you help feed every year.

Use the human resources available to you as well. Technical staff from several federal and state agencies as well as agribusiness specialists and private crop consultants, will help you protect your land and water.

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