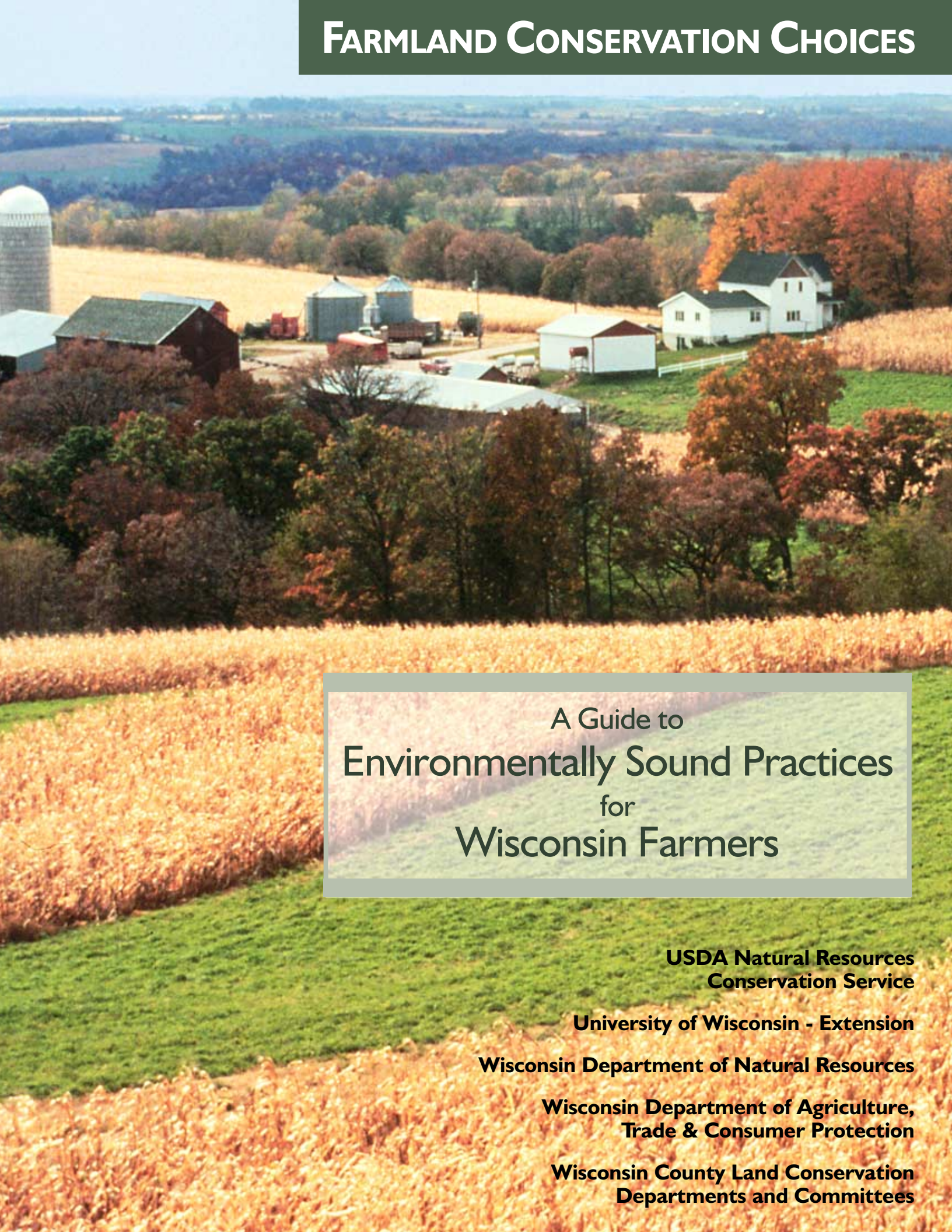
Farmland Conservation Choices



A Guide to Environmentally Sound Practices for Wisconsin Farmers

USDA Natural Resources Conservation Service

University of Wisconsin - Extension

Wisconsin Department of Natural Resources

Wisconsin Department of Agriculture, Trade & Consumer Protection

Wisconsin County Land Conservation Departments and Committees

Farm Resource Management: Putting the Pieces Together

Across Wisconsin, farmers face the challenge of making a living from the land, while protecting our natural resources through sound farming practices. The key to meeting this challenge successfully is a plan for managing all the farm's resources.

A plan is like a jigsaw puzzle, a complete picture made up of many interlocking pieces. On a farm, each conservation practice works in combination with others to complete a picture.

When designing a resource management plan for your farm, the first step is to take an inventory of all the pieces. Think about every field, pasture, pond, stream, wetland, and woodland. Then consider which conservation practices would fit together.

Farm Resource Management Checklist:

- ✔ **What are natural resources on my farm?**
- ✔ **What crops will I grow?**
- ✔ **Am I using crop rotations to reduce pest and disease problems?**
- ✔ **What type of wildlife would I like to encourage on my farm?**
- ✔ **Have I minimized erosion and runoff?**
- ✔ **Can I use wetlands or buffer strips to filter runoff water?**
- ✔ **Am I making the best use of manure and other nutrients on my cropland?**

Putting all the farm conservation pieces together can seem overwhelming. But that's where teamwork can help. A team of specialists from county, state and federal conservation offices, as well as private consultants, can help you develop the plan, put needed conservation practices in place, and show you how to work with them and maintain them over the years. Make use of these specialists to choose economically and environmentally sound practices for your farm.

About This Guide

This guide features 26 common conservation practices. It explains how each practice works and how it helps improve a farm, lists things to think about when considering the practice, and points out basic maintenance needs.

Some of the most profitable practices, like nutrient or pest management, require little or no financial investment, can reduce expenses and may go the farthest toward protecting water quality. Other practices may not have an immediate pay back in terms of increased farm income, but pay off in other ways through cleaner water, more wildlife, long-term soil conservation, and an improved quality of life.

This publication can be a first step in developing a farm conservation plan. Look through the practices and see which ones might fit into your farm operation. And remember that each practice, like a piece of a puzzle, is meant to work in combination with others as part of a total resource management plan.

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Crop Rotation

Changing the crops grown in a field, usually in a planned sequence.

How it Works

Crop rotations in Wisconsin typically include corn, legumes, and small grains. Rotations that include small grains and alfalfa can significantly reduce soil erosion. Alfalfa and other legumes in the rotation can save fertilizer costs because they replace the nitrogen that corn and other grains remove from the soil. Rotations reduce pesticide use by naturally breaking the cycle of weeds, insects and diseases.

Planning

- Design crop rotations to meet your farm's needs and goals for yields and erosion control.
- Rotations that contain small grains and hay provide better erosion control.
- Sod or hay-based rotations offer long-term crop production flexibility.
- Reduce the potential for nitrate leaching to groundwater by rotating crops that provide nitrogen (alfalfa, clover, soybeans) with crops that use nitrogen (corn, wheat).

Maintenance

- Consider the potential for herbicide carryover to avoid crop failure.
- Consider the nitrogen credit when replacing a legume with corn or other grains.

Any tillage method that leaves crop residue on the surface to reduce erosion.

How it Works

Crop residue left on the surface shields the soil from rain and wind until emerging plants provide a protective canopy. Crop residue also improves soil tilth, adds organic matter to the soil, and may even result in a little grain being left for wildlife. Less tillage reduces soil compaction and saves the farmer time and fuel.

Three basic crop residue management systems are common in Wisconsin:

- Mulch-till uses such implements as a chisel plow or disk to till the entire field.
- No-till leaves the soil and crop residue undisturbed except for the crop row where the seed is placed in the ground.
- Zone or strip-till uses coulters to till a 5"-7" strip for injecting starter fertilizer and planting in one operation.

Planning

- Plan for residue levels needed to reduce erosion. Planning for residue cover begins at harvest. Reduce the number of tillage passes and set tillage tools to shallower levels to leave more residue on the surface.
- Straight points and sweeps on chisel plows leave more residue than twisted points.
- Consider your soils and crop rotation. Heavy residue (corn, for example) on droughty soils can help conserve soil moisture; however, heavy residue on poorly drained soils can delay spring warming and drying.
- Nutrient and pest management practices might need to change as you farm with higher levels of residue.
- You may need different equipment suited to the type of crop residue management you plan to use.

Maintenance

- Measure crop residue using the "knotted line" method. Divide a line into 100 equal parts and stretch it diagonally across the crop rows. Walk along the line counting the number of marks that have residue under them. The total number of marks with residue under them is the percent cover for the field. Take three to five measurements in representative parts of the field.

Contour Buffer Strips

Strips of grass or other permanent vegetation in a contoured field that help trap sediment or nutrients; similar to contour stripcropping except that the grass strips are narrower.

How it Works

Because the buffer strips are established on the contour, runoff flows slowly and evenly across the grass strip, reducing sheet and rill erosion. The vegetation can also provide habitat for small birds and animals. In some cases buffer strips might be an inexpensive substitute for terraces.

Planning

- Other conservation measures such as residue management might be needed to reduce siltation of the grass strips.
- Make sure that the acres planned for crop strips will meet your production goals.
- Grass buffer strips must be at least 15 feet wide, and commonly make up 20% to 30% of the area of the slope.
- Select a grass that yields high-quality hay if not cut until mid-summer.

Maintenance

- Control weeds and brush in grass strips, and fertilize as needed based on soil test results.
- Keep vegetation tall in spring to slow runoff.
- Delay mowing until July 15 to protect ground-nesting birds.
- Move the buffer up or down the slope as needed to re-establish vegetation.

Tilling and planting across the slope following the contours of the land, and breaking the field into alternating bands of row crops and hay or small grains.

How it Works

Farming on the contour creates small ridges that slow runoff water. In stripcropping, the small grain or hay strips slow runoff water, allowing infiltration and filtering sediment. Farming on the contour rather than up and down reduces fuel consumption and is easier on equipment.

Planning

- Longer, steeper slopes may require stripcropping rather than just contour farming.
- Irregular slopes may require more than one key contour line.
- Row crop strips need to be roughly the same width as hay or small grains; consider how many acres of row crops you need. Remember, hay strips will rotate to row crops over time.
- Rotating strips from corn to legumes allows corn to use the nitrogen added to the soil by the legumes.
- Consider whether herbicide carryover will be a problem.
- Replace end rows with grass or legumes, which will reduce erosion and make it easier to turn equipment.
- Use grass waterways where runoff is concentrated.
- Strip width will depend on slope, equipment and management.

Maintenance

- Keep strip widths consistent from year to year.
- In contour farming, establish a narrow, permanent strip of grass along each key contour line to avoid having to lay out new key lines every year.

Cover Crop

A close-growing crop that temporarily protects the soil during the period before the next crop is established.

How it Works

Cover crops such as cereal rye, oats and winter wheat are planted as soon as possible after harvest on fields where residue will not adequately protect the soil from wind and water erosion during winter and spring. Cover crops can also be used on sandy soils to reduce nitrate leaching. In some situations a cover crop can be planted after the last cultivation to provide a longer growing period.

Planning

- Cover crops are best suited to low residue crops such as soybeans or corn silage grown on erodible land.
- Seeding from late-August to mid-September is recommended. Cover crops need 30-40 days for good growth before a hard frost, so seeding after harvest normally won't allow time for the crop to grow and survive winter.
- Cover crops can be air seeded prior to harvesting soybeans or seeded conventionally after silage harvest or when cultivating.
- Many crops can be used for cover, although cereal rye is probably most common. Keep in mind that legume cover crops add nitrogen to the soil, and provide low-cost fertilizer for subsequent grain crops.

Maintenance

- The cover crop should be killed in spring by mowing or herbicide application. Tillage is not recommended because it will bury the residue. Early kill is important to reduce the risk that the cover crop will deplete moisture needed by the grain crop.
- Restrict grazing if necessary.

A strip of grass or legumes at the edge of a field used in place of end rows.

How it Works

Perennial vegetation is established at the outside edges of a field where the edges are eroding. The grass or legume strips replace crop end rows, which would be planted up and down hill. The vegetation prevents erosion, helps filter runoff from the field, and provides habitat for birds and small animals. The border provides equipment turning and travel lanes.

Planning

- The borders should be at least 16 feet wide, or wider if needed to allow your equipment to turn.
- Seed with legumes, perennial grasses or a mixture of the two. Check with local conservation specialists for appropriate seeding dates.

Maintenance

- Shut off sprayers when turning on a field border, and insist that custom applicators do the same.
- Fertilize and reseed as necessary to maintain vegetative cover.
- Delay mowing field borders until after July 15 to allow nesting birds to leave their nests.

Managed Grazing

(Rotational Grazing)

Planting forage and using grazing rotations among different fields to maximize production and reduce sediment and nutrient runoff.

How it Works

A landowner develops a management plan for grazed land to improve forage quality, livestock health and water quality. In a managed grazing system, livestock are moved frequently among pasture divisions or paddocks based on forage quality and livestock nutrition needs. Portable fencing allows each paddock to rest and regrow until the next grazing rotation. Compared to traditional continuous grazing, managed grazing can provide a healthier plant community, decreased erosion and runoff, better livestock health and performance, and reduced costs to the landowner.

Planning

- Consider the number of livestock and the forage needed. Will existing pasture meet livestock needs, or will seeding and/or fertilization be needed? Plan for management alternatives for times of low forage production.
- Is there adequate, good quality water distributed throughout the pasture?
- Soil erosion control practices may be needed on stream banks or in areas of concentrated runoff before the grazing system can be put in place.
- Move livestock on and off paddocks according to forage availability, not according to the calendar. Plan rest periods so paddocks have adequate time to recover during the growing season.

Maintenance

- Apply lime and fertilizer as indicated by soil tests.
- Haying may be necessary during heavy growth periods.
- Repair fencing as needed.
- Remove or drain pasture watering systems during winter.
- Revise the rotation schedule and the size and number of paddocks as herd size and other factors change.

Planting grasses or legumes in low-producing pasture or as a replacement for a cropped field.

How it Works

Establishing heavy sod cover provides quality forage for livestock, stablizes eroding areas, filters runoff water, and can provide wildlife habitat and cover.

Planning

- Before seeding or inter-seeding, graze closely or clip to expose soil surface to sunlight.
- Select plant species that will meet the needs of your livestock. Legumes added to grasses will improve forage quality and extend the grazing season.
- If possible, choose species that require minimal use of pesticides.
- If only two grass species are selected, use them in equal proportions in the seeding mixture. Do not mix cool and warm season grasses in the same pasture.
- If erosion is a problem, plan to till on the contour and leave at least 30% residue after planting. A nurse crop of oats might be necessary on steeper slopes or areas where weeds are a problem.
- The new pasture should not be grazed until vegetation is well established.

Maintenance

- Fertilize as needed based on soil tests.
- Mow weeds when they reach a height of 6-8 inches. Control persistent weeds with herbicides.

Grass Waterway

Shaping a natural drainageway and establishing grass to prevent gullies from forming in fields.

How it Works

A natural drainageway is graded and shaped to form a smooth, shallow channel and then planted to sod-forming grasses. The drainageway carries runoff water from the field and the grass prevents the water from forming a gulley. The vegetation may also trap some sediment washed from cropland, absorb some chemicals and nutrients in the runoff water, and provide cover for small birds and animals.

Planning

- The width and depth of the waterway will depend on the nature of the fields it drains.
- A grade stabilization structure (see page 13) may be needed at the bottom of the waterway to prevent a gully from forming.
- Use soil conservation measures on the fields to prevent siltation of the waterway.
- Significant land reshaping might be required in some situations.
- Establishing good cover quickly is critical. Tile drainage, mulching or other temporary cover might be needed until grasses are established.

Maintenance

- Lift equipment out of the ground and shut off spray equipment when crossing the waterway.
- Do not use the waterway as a roadway.
- Fertilize if needed and mow periodically, but wait until after July 15 when birds are done nesting.
- Be careful not to till into the edges of the waterway.
- Avoid end rows planted along the waterway, because they may allow gullies to form on the waterway edge.

An earthen, concrete or other structure built across a drainageway to prevent gully erosion.

How it Works

A dam or embankment built across a gully or grass waterway drops water to a lower elevation while protecting the soil from gully erosion or scouring. Structures are typically either a drop spillway or a small dam and basin with a pipe outlet.

Planning

- Pipe outlet structures are typically used if the area upstream of the dam can temporarily hold most of the water from a storm. Drop structures are used where the area upstream of the site has minimal storage capacity.
- Grade stabilization structures can be expensive to install and should always be designed by a qualified person.
- If planned to store water, a grade stabilization structure can also provide a water source and habitat for wildlife.
- Adequate soil conservation practices are needed upstream of the structure to avoid sedimentation.
- Check to see if any permits are required.

Maintenance

- Remove trees and shrubs within 30 feet of the structure.
- Keep burrowing animals away from earthen structures.
- Repair cracks in concrete.
- Keep inlets, outlets and the area 50 feet downstream of the outlet free of debris.

Water and Sediment Control Basin

A small earthen embankment built across the bottom of a drainageway to temporarily store runoff.

How it Works

An earthen embankment acts similar to a terrace. It traps water and sediment running off cropland upslope from the structure, and reduces gully erosion by controlling flow within the drainage area. The basin releases water slowly, usually through infiltration or a pipe outlet and tile line. Basins can be effective in reducing sedimentation of nearby waters, especially in areas where residue management or other practices are impractical.

Planning

- The area draining to the basin is usually not larger than 30 acres.
- The basin should be large enough to control runoff from the 10-year, 24-hour storm.
- Some sites are too steep for a basin to work effectively.
- Location (and spacing of multiple basins) depends on slope, tillage and crop management; NRCS can provide advice.
- Erosion control practices are needed upslope to prevent excess sedimentation.
- The fill material used to construct the embankment should be free of debris such as sod, roots, large stones, etc. and be well compacted.

Maintenance

- Reseed and fertilize as needed to maintain vegetation.
- Check the basin after large storms to determine the need for sediment removal. Make needed repairs to the embankment.

Planting grass, legumes or other vegetation to protect small, badly eroding areas.

How it Works

Permanent vegetation stabilizes areas such as gullies, over-grazed hillsides or terrace backslopes. While the primary goal is erosion control, the vegetation can also serve as nesting cover for birds and small animals.

Planning

- Other soil conservation measures may be needed above the critical area to ensure stabilization. Sometimes, other conservation practices will be sufficient to stabilize a badly eroding area.
- Consider whether the area will serve as nesting cover, and select plantings accordingly. Native grasses and wildflowers add beauty and wildlife.
- Bare slopes or areas disturbed during construction should be mulched to provide temporary protection.
- Annual grasses may be needed until permanent vegetation is established. Consider oats or a similar nurse crop in severely eroded areas. (Mow oats before they head out and mow high to avoid clipping the permanent vegetation.)
- Lime and fertilizer may be needed before planting.

Maintenance

- Permanently exclude livestock from steep slopes.
- In areas where grazing will be allowed, do not allow grazing for a year after planting, and prevent overgrazing once permanent cover is established.
- Delay mowing until July 15 to protect ground-nesting birds.
- Native grasses may benefit from periodic burning, which stimulates new growth and controls competing plants.

Diversion

An earthen embankment and channel, similar to a terrace, constructed across a slope to collect water, divert it to a stable outlet, and protect an area downslope.

How it Works

A diversion keeps excess runoff away from areas with concentrated pollutants such as barnyards or feedlots and fields with easily eroded soils. A diversion at the base of a slope can help keep bottom lands drier and more productive. Similar to terraces, the permanent vegetation on a diversion provides habitat for birds and small animals.

Planning

- A diversion and its outlet should be able to handle the peak runoff from a 10-year, 24-hour storm. (A diversion protecting animal lots or manure storage areas should handle the 25-year, 24-hour storm.)
- Suitable outlets for a diversion include a grass waterway, an underground tile outlet or a grade stabilization structure. Vegetated outlets should be constructed before the diversion is constructed.
- The top of a diversion should be at least four feet wide.
- In erodible areas, soil conservation measures will be needed to keep the diversion from filling with sediment.
- Consider a filter strip above the diversion to trap sediment and protect the diversion.

Maintenance

- Keep outlets clear of sediment and debris.
- Maintain vegetation on the diversion ridge; fertilize as needed.
- Control burrowing animals in the diversion.
- Do not use the diversion as a road.
- Delay mowing until after July 15 to protect ground-nesting birds.

An earthen embankment that follows the contour of a hillside, breaking a long slope into shorter segments and intercepting the flow of water.

How it Works

Terraces serve as small dams on a hillside, intercepting runoff water and guiding it to a safe outlet. Some terraces are designed to collect water and temporarily store it until it can filter into the ground or be released through a stable outlet. Other terraces are designed as a channel to slow runoff and carry it to a stable outlet such as a grass waterway. Terraces can greatly reduce erosion on steep slopes, and the permanent grass on front or back slopes serves as nesting habitat.

Planning

- Terraces are expensive to construct. They may be practical where rotations or residue management are insufficient for erosion control.
- Terraces are designed to control runoff from a 10-year, 24-hour storm.
- Terraces are best suited to fields with a uniform, moderate slope.
- Other soil conservation practices may need to be used with terraces to prevent sedimentation of the channels.
- Cropland widths between terraces are designed to match planting equipment width.

Maintenance

- Remove accumulated sediment from channels and around pipe intakes.
- Repair sections of the terrace embankment or channels that have eroded or have settled excessively; reseed and fertilize to maintain good vegetation.
- Control burrowing animals, weeds, brush and trees.
- Do not drive on or over terraces.
- Avoid farming close to intakes, and repair or replace damaged intakes.

Structural practices that can help protect water quality and make manure management more convenient for the farmer.

How it Works

Along with a nutrient management plan, many farmers use manure storage structures and barnyard runoff controls to improve manure management and protect water quality. Storage allows manure to be safely stockpiled until conditions are environmentally safe for spreading. Runoff controls such as diversions, rain gutters, settling basins and filter strips keep clean water from flowing over manure-covered areas and clean up runoff water before it reaches a waterway.

Planning

- A diversion around an animal lot and gutters on buildings are inexpensive and effective ways to minimize the amount of water falling on and washing across manure covered areas. A diversion is often the first step in solving a runoff problem.
- Incorporating a concrete wall with an outlet box at the lower end of the lot controls the rate of runoff to filter areas, and allows trapped manure to be easily scraped and removed. A grass filter strip cleans up water that leaves the lot.
- Four types of storage are common in Wisconsin: walled enclosures, earthen ponds, above-ground tanks and under-floor storage. Before deciding on manure storage, carefully consider your operation, siting or design limitations, bedding, transfer to storage, local and state regulations and costs.
- Consider that the costs of storage, even with cost-sharing, are seldom offset by the fertilizer savings. Costs range from $100 per cow for earthen ponds to $1,000 per cow for above ground tanks.

Maintenance

- Runoff controls require regular maintenance. Gutters need to be cleaned, filter strips cut and reseeded as needed, and the yard and outlet box regularly scraped and cleaned.
- Manure storage structures need to be checked regularly for leaks or structural damage. Leaking structures can pose a significant threat to surface water and groundwater.

Careful management of all aspects of soil fertility to meet crop needs and minimize impacts on water quality.

How it Works

A landowner develops a farm nutrient management plan. The plan is based on realistic crop yield goals, soil tests to determine the nutrients available in fields, and taking credit for nutrients from legumes and manure applications. The plan may also identify areas of special concern such as flood plains and steep slopes. Nutrients are applied at the proper time using the appropriate application method. Sound nutrient management reduces fertilizer costs and protects water quality.

Planning

- Crop consultants and local conservation agencies can help you prepare a nutrient management plan.
- Test soil according to University of Wisconsin guidelines to get an accurate picture of available nutrients.
- Calculate nutrient credits from manure and the previous year's legume crops.
- Make sure the nutrient management plan is consistent with your farm conservation plan, especially crop rotations and practices to prevent runoff and erosion.
- Weigh and calibrate manure spreaders to determine the amount of manure in a load.

Maintenance

- Soil test all cropland fields every three years.
- Keep records of manure applications to calculate manure nutrient availability.
- Use a preplant or a pre-sidedress soil nitrate test on fields to determine credits for carry-over nitrogen.
- Stored manure should be tested before application to determine nutrients; "book values" can be used for daily-hauled manure.

Pest Management

Using a pest management strategy that identifies specific treatments for specific pests on specific areas of a field to economically protect the crop and minimize environmental damage.

How it Works

Crops are scouted to determine the types of pests (insects, weeds, diseases) and their stage of development. The potential damage from the pest is weighed against the cost of control. If pest control is economical, alternatives are evaluated to select the best treatment in terms of cost, effectiveness and environmental impact. Specific treatment only when needed saves money, prevents over-treatment and protects water quality.

Planning

- Use crop rotations to reduce the chance of insect problems.
- Use records of past crops and pest control to help evaluate effectiveness of various treatments.
- Before using a pesticide, consider the leaching and runoff potential of both the pesticide and the soils on the farm.
- Use the lowest practical application rate, and use spot treatment or banding when possible.
- Calibrate sprayers.
- Follow safety guidelines for handling pesticides (wear protective clothing, mix and load in an area designed to protect water quality, triple rinse containers and burn paper bags).

Maintenance

- Scout every year and keep records to best identify pests and control effectiveness.
- Design crop rotations to minimize pests.

Unused wells that are filled and sealed to prevent surface runoff from contaminating drinking water aquifers.

How it Works

Many farms have unused wells. Pollutants that enter these wells move quickly and without filtration to groundwater. Large open wells themselves can pose a safety hazard to children and animals. Abandoned wells are sealed by removing pumps, piping and debris, and filling the hole with a slurry of cement or bentonite chips.

Planning

- Locate unused wells. Pipes sticking out of the ground around the farmstead and old windmills often indicate well locations. Other locations may not be as obvious. Check depressions in the ground, basements, under front steps and near old cisterns.
- The Wisconsin Geological and Natural History Survey in Madison maintains well construction reports, and may have a record of the type and depth of wells on your property.

- Determine the type of well to be sealed. Driven sand points, drilled wells and dug wells are the three main types in Wisconsin. Deep drilled wells may need to be sealed by a registered well driller; driven and dug wells may often be sealed by the landowner.
- Wisconsin well regulations require reports of well sealing. Before sealing a well, check with the local DNR office for exact requirements.

Maintenance

- Dug wells that have been filled may have a cover of earth. This should be checked for subsidence, and earth added to prevent water ponding in the depression.

Riparian Buffer

Strips or small areas of land in permanent vegetation that help control pollutants and promote other environmental benefits.

How it Works

Riparian vegetative buffers are strips of grass, trees or shrubs established along streams, ditches, wetlands or other water bodies. Riparian buffers trap sediment, filter nutrients, and provide habitat and corridors for fish and wildlife.

Planning

- Work with a conservationist to select plants for the buffer and determine its width.
- Soil conservation measures will be needed above filter strips to keep them from being overloaded with sediment.
- Control grazing on buffer areas.

Maintenance

- Rills or small channels may develop in grass areas and need to be repaired and reseeded.
- Control weeds and brush in grass buffers.
- Delay mowing grass areas until after July 15 to protect nesting birds.
- Remove sediment and reseed the buffer periodically.

Protecting a stream or other body of water by re-shaping and stabilizing the bank and excluding livestock.

How it Works

Where stream banks are eroded, they are re-shaped and seeded, and sometimes protected with rock rip-rap or seeded with bio-engineering materials. In some cases a special wood structure (lunker) is fitted into the bank to stabilize it and provide fish habitat. Stabilizing the streambank or shoreline protects water quality, improves fish habitat, and the vegetation provides habitat for birds and small animals. Fencing restricts livestock access to the bank or shore, with the exception of controlled areas for drinking or crossing.

Planning

- If you have livestock, plan to install an alternate watering system away from the stream, or a stream crossing that can also provide access to water.
- In areas that are prone to flooding, single or double wire electric fences with flexible line posts may be more practical than other types of fence.
- Remove large obstacles such as logs and stumps from the stream bed if they are causing turbulence along the banks. (Check with the local DNR office for possible permit requirements.)

Maintenance

- Keep fences repaired.
- Remove off-stream watering systems in winter, if necessary.
- Control undesirable tree growth.

Restoring a previously drained wetland by filling ditches or removing or breaking tile drains.

How it Works

Where wetlands have been drained and farmed, subsurface and surface drains are plugged or removed so water can refill the area. In other cases, low-lying areas are scraped to form a shallow basin, and small dikes or embankments are installed to establish and maintain water levels. Native wetland vegetation can be planted to enhance existing plants. The wetland temporarily holds runoff (reducing flooding downstream), and filters sediment, nutrients and chemicals before the water recharges groundwater. America's ducks and geese rely on wetlands, as do hundreds of species of plants, amphibians and native birds.

Planning

- Consult local DNR and county zoning offices for necessary permits.
- Check with local NRCS offices for soils information, and design and construction standards.
- Make sure soils at the site will hold water.
- Consider whether plugging drains or breaking tile lines will have adverse effects on other parts of your farm, neighboring farms or established drainage districts.
- Exclude livestock from the area.
- Establish vegetative cover on embankments and spillways.
- Existing natural seed banks will sometimes regenerate native vegetation in the wetland.
- Adjacent upland nesting cover greatly improves the value of wetlands for wildlife.

Maintenance

- Replanting wetland vegetation may be needed until a good stand is established.
- Control beavers and muskrats, and keep burrowing rodents out of dikes.
- Remove debris from pipe inlets and outlets.
- Inspect and repair pipes or water control structures.

Rows of trees and shrubs that protect areas from wind and act as a snow fence.

How it Works

Multiple rows of trees are planted to protect a farmstead, feedlot or open fields from wind and snow. Coniferous trees or a mix of coniferous and deciduous trees can be used, along with one or two rows of shrubs. The established trees and shrubs slow wind on the downwind side of the windbreak for a distance of 10 times the height of the trees. The windbreak reduces wind erosion, conserves energy used for heating and cooling, serves as a sound barrier, and provides wildlife food and cover.

Planning

- Plan the windbreak for at least the north and west sides of the areas to be protected, with the rows extending 50 feet beyond the area. However, don't plant too close to buildings, roads or driveways on north and west sides or snow may accumulate in these areas.
- Avoid planting windbreaks on the south or east sides of roads or driveways; the trees will shade the road and prolong icy conditions.
- Consider whether the mature windbreak will cause a vision hazard for drivers.
- Keep plantings at least 20 to 30 feet away from phone or utility lines.
- A mix of conifers, deciduous trees and shrubs provides the best cover for wildlife.
- Space trees 10-12 feet apart, and shrubs 4-8 feet apart.

Maintenance

- Control competing vegetation with tillage or herbicides before planting and for the first three years after planting.
- Fence out livestock.
- Inspect the windbreak regularly to control damage.

Woodlot Management

Improving the quality and quantity of existing woodland trees and ground cover to conserve soil and water, enhance wildlife and produce valuable timber.

How it Works

Land devoted to timber production is managed to provide income, protect soil and water, improve wildlife habitat, and create opportunities for recreation. Twigs, limbs, leaves and other debris filter nutrients and chemicals from surface runoff and reduce erosion.

Planning

- Consult a professional forester for advice on improving the quality of the stand, harvesting and overall management of the woodlot.
- When replanting in an existing woodlot to increase the number of trees, consult the planting guidelines on page 27.
- Protect the woodlot from grazing.
- Consider the needs of woodland wildlife when making management decisions.

Maintenance

- Pruning may be necessary for certain high-value species. Check with a local forester.
- Trees with the best potential should be left to grow, and competing trees marked for removal.
- Periodically check for damage from insects, rodents or diseases.

Establishing and maintaining trees in fields or understocked woodlands.

How it Works

Tree species are matched to existing soil types, site conditions and the landowner's objectives. Planting trees on marginal cropland prevents soil erosion, protects water quality, improves wildlife habitat and may provide a break against wind and drifting snow. Increasing the number of trees on a poorly stocked, thin woodlot can increase the woodlot's productivity and farm income.

Planning

- Make sure the site is suitable for the tree species you want to plant.
- Consider the potential market and income for the trees compared to using the land for crops or grazing.
- Plant trees in spring as long as there is adequate moisture and minimal potential for hard frosts. Containerized seedlings can be planted into early summer.
- When ordering seedlings, make sure you can plant them within 5 days of arrival. Have a cool, shady place to store them and keep the roots moist but not wet.
- The standard spacing for planting trees ranges from 9-by-9 feet to 5-by-7 feet (approximately 550 to 1,200 trees per acre) depending on species and site conditions. Consult with a local forester for specific recommendations.
- Some site preparation will be necessary before planting. If the site is covered with sod or brush, prepare the site in late summer or early fall before planting the following spring. A local forester can recommend the treatment suitable to the site and species to be planted.
- Protect the woodlot from grazing.
- Consider leaving some fire lanes.

Maintenance

- Mowing and/or herbicides may be necessary to control competing weeds until the trees are 3 to 4 feet tall.
- Check periodically for damage from disease, insects or rodents.
- Review tree survival after the first and third years to determine the need for replanting. If survival is less than 60%, interplanting or replanting may be necessary.
- Pull fallen leaves and debris off seedlings in fall.

Wildlife Food Plot

Establishing a variety of plants that provide food for wildlife.

How it Works

Food plots can be established within an existing crop field or in a separate location. A few rows of corn left standing after harvest or a small plot planted elsewhere will help wildlife through the winter when food is in short supply.

Planning

- Locate food plots close to wildlife wintering areas to make food easily available.
- Food crops include corn, sorghum, sunflowers, buckwheat, millet and soybeans.
- Make sure there is adequate cover, travel lanes and water to support wildlife.
- Do not place the food plot close to high traffic areas where wildlife will be endangered.
- Plant block-shaped food plots at least one acre in size to prevent the entire plot from filling with deep snow.
- Remember to control erosion when preparing the seedbed and planting the food plot.
- Exclude livestock from the area.

Maintenance

- If herbicides are needed to control noxious weeds, spot spray and avoid herbicides that will endanger adjacent seedlings.

Creating, maintaining or improving food and cover for upland wildlife.

How it Works

Planting trees, shrubs, warm season grasses and other vegetation that provide food and cover will attract wildlife to an area. The perennial ground cover reduces soil erosion, filters runoff and increases infiltration. Carefully planned wildlife habitat can add value and beauty to a farm.

Planning

- Consider the type of wildlife you want to attract and choose cover and habitat for those species. NRCS field staff and DNR wildlife specialists can help you plan the habitat.
- Consider whether habitat on your land can complement other types of habitat in your area.
- Are there any threatened or endangered species you could help protect?
- Is a particular piece of land better suited to upland habitat than cropland?
- Include bird houses and feeding stations in the habitat.
- Exclude livestock from the area.
- What was your land before it was farmed? If it was grassland or prairie, consider planting it back to prairie.

Maintenance

- Use weed management to maintain desirable plant species.
- Prescribed burning may be necessary to regenerate growth and control undesirable species.
- Replant vegetation if the habitat is damaged by disease or poor weather.

Farmland Conservation Choices

A Guide to Environmentally Sound Practices for Wisconsin Farmers

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A Final Word

Every year, more Wisconsin farmers accept the challenge of protecting our natural resources while maintaining farm profits.

Taking the steps necessary to manage all of a farm's resources can seem like a formidable task. But assistance is available at every step. This booklet is a tool to help you think about the resources on your farm, and to select practices that will help balance environmental needs with your farm's economic needs. Staff with the agencies listed here will help you sort through the options, discuss resource management planning, and provide more detailed publications on these and other practices. Cost-sharing is often available, greatly reducing the cost to the landowner.

Contact your local NRCS office, USDA Service Center, county Land Conservation Department, UWEX office, or local DNR office for more information or assistance.

USDA NRCS Natural Resources Conservation Service

UW Extension

Wisconsin Dept. of Natural Resources

Department of Agriculture, Trade & Consumer Protection · Wisconsin

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