

A Guide to Managing Pasture Water



“Streamside Buffers”

THE NEED TO MANAGE PASTURE WATER

By properly managing your pasture water, you not only provide high-quality water to maintain the health and productivity of livestock on your farm, but you also contribute to maintaining the water quality downstream – water that is used for livestock and human consumption, as well as recreational activities like fishing and swimming.

Pasture conditions that promote frequent gatherings of cattle near streams and ponds may increase sediment, nutrient and pathogen loading of these water sources from manure deposition, as well as bank erosion. However, such water-quality problems may be controlled by grazing management or pasture characteristics that alter the timing, frequency, duration or intensity of cattle congregating near pasture streams and ponds. The most appropriate practices will depend on: the characteristics of pasture and water sources; costs, labor and management to install and maintain a management practice; economic resources, including government cost-sharing to fund the installation of a management practice; and benefits beyond water-quality improvement, such as improved forage quality, providing equipment crossings, or improved hunting that will result from a particular practice.

Riparian Areas

Riparian, or streamside, areas serve as a transition between upland pastures and waterways. In other words, they link pastureland with water. When these areas are managed to protect the waterway from any negative impacts of adjacent land use, they become buffers. Riparian buffers that are managed with grasses alone or a combination of trees and/or shrubs can provide grazing and hay land; they also can remove nutrients from groundwater, filter sediment and nutrients from surface runoff, and provide valuable wildlife habitat. The best riparian buffer design is one that benefits both the landowner and the environment. Successful establishment of a buffer requires careful site assessment, implementation and maintenance.



Riparian buffers that are rotationally grazed tend to have more surface cover than those that are continuously grazed.

DETERMINE YOUR OBJECTIVES

There are many design options for riparian buffers. To determine which type is best for your situation, you must first decide your objectives for using the land. Questions to answer include:

- Will the entire area be grazed, or will a portion be excluded for wildlife habitat and water-quality benefits?
- If the area is to be grazed, under what type of management (season, frequency, duration, intensity)?
- If fenced, will maintenance of the fences be a problem?
- Are time and resources available for establishment and maintenance of the buffer?
- Is access to the stream needed for water, or is alternate water available?
- Are private consultants available to help establish the system, or will you be doing it?
- If planting new vegetation, what types would be preferred (native grasses, shrubs, trees)?

ASSESS THE PRESENT CONDITION

After identifying your goals and concerns, then assess the current condition of the riparian area and identify any specific problems. Utilize aerial photographs and U.S. Geological Survey (USGS) quadrangle maps to determine both the topography and how surface runoff impacts the stream. County soil surveys can be used to determine soil types and provide detailed information on the physical and chemical properties of the soils, as well as any management limitations that should be considered. If you need help, contact your local U.S. Department of Agriculture (USDA) Service Center.

Next, identify potential problems along the stream corridor. These can include:

- Stream meandering
- Gullies and unacceptable streambank erosion
- Falling trees
- Upslope erosion
- Sparse wildlife habitat

A helpful tool in this process is the Natural Resources Conservation Service (NRCS) Stream Visual Assessment Protocol (SVAP). The SVAP allows you to develop a composite rating of the present condition of the stream, which will help you design a riparian buffer that meets your needs. Again, contact your local USDA Service Center if you need assistance.



Naturally meandering streams always have some amount of active bank erosion. A well-designed riparian buffer can slow this process, but not eliminate it.

BUFFER DESIGN

The next step is to then begin the design process. Be aware that some federal or state cost-share or incentive programs will require specific designs. Please consult your local natural resource professional for any specific guidelines to follow. Many practices can be used alone or in combination, including: exclusion (fencing, living fence); vegetative buffers (native grasses, shrubs, trees); streambank stabilization; and/or wetlands. Managed grazing may also be used to reduce the impact of livestock on the streams. And, many types of vegetation, alone or in combination, can be used in a riparian buffer, depending on the landowner's objectives.

BUFFER ESTABLISHMENT

Now that you have a buffer design that will fit your needs and is right for the site, you are ready to get going! If you need professional help to establish or maintain your buffer, contact your local Soil and Water Conservation District Office. They maintain a list of qualified private contractors.

Site preparation

Proper site preparation is crucial to the long-term success of the buffer. Assuming the site is currently in forage grasses, site preparation should begin in the fall prior to planting. For trees, eliminate competing perennial vegetation with glyphosate in a 3-foot to 4-foot wide strip where trees or shrubs will be planted. If the area will be planted to native grasses and flowers, mow in the late summer and kill the area with glyphosate in the early fall. Then spray again in the spring.

Plant materials

High-quality, 1-2-year-old seedlings of most trees and shrubs species may be obtained from the State Forest Nursery or private nurseries. Order early to get your desired species and planting stock. Mixtures of native grasses and flower seeds can be obtained from several private dealers. Also, the Iowa Chapter of Pheasants Forever has a Native Grass Seed Program, which has a variety of mixes available. If you're planting both woody plants (trees and shrubs) and prairie plants (grass and flowers), they should be separated into distinct zones. This will reduce plant competition and facilitate maintenance. If wildlife habitat is an important objective, consider planting a wide variety of native trees, shrubs, grasses and flowers. For the woody plants, ones that bear fruits or nuts make especially good wildlife habitats. For the prairie plants, consider using local ecotypes, as they will be the varieties best adapted to your site.

Layout

The layout of your buffer will be specific to your site and plant materials. Make sure to match your layout to the equipment you will use to maintain the planting. For example, remember to space your tree rows wide enough to allow mowing with available equipment. Trees rows should be 8-12 feet apart. Depending on species and desired results, leave 6-10 feet between trees within a row. For shrubs, leave 4-6 feet between plants within a row.



Properly functioning riparian buffers will provide a habitat for many game and non-game species of wildlife. (Photo courtesy of USDA NRCS)

A change in management or buffer establishment will dramatically alter the look and functioning of a riparian zone in just a few years.

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Planting

Trees and shrubs should be planted in early spring (between March and May, depending on the part of the state). There are several options for the timing and method of seeding prairie (grass and flower) species. Seed can be successfully broadcast or drilled either in the late fall or spring. If planting in the spring, early spring is desirable, but, depending on the amount of soil moisture, you can successfully establish plantings through June. If seeding into cultivated ground, prepare a firm seedbed using an implement, such as a cultipacker. Tree planters or seed drills often are available through local natural-resource agencies. Contact your local Soil and Water Conservation District for availability.

BUFFER MAINTENANCE

To maintain their effectiveness, buffers must be managed. Regularly scheduled maintenance should begin immediately after the buffer has been planted. It also is important to carefully inspect your buffer annually or after major flood events for any damage that might have occurred.

Grazing management

Historically, prairies were subjected to grazing by deer, bison and elk, and there is evidence that established prairie grasses and flowers will flourish under managed grazing plans. Such plans should assure that grazing intensity does not reduce plant vigor, as this would subject the planting to invasion by weedy species. Tree and shrub plantings are very sensitive to grazing damage, especially as small seedlings. Grazing such areas should be avoided during the establishment phase, and as the system matures, be managed such that herbaceous forage is utilized, but no damage is imparted on the woody species.

Weed control

Tree and shrub plantings are sensitive to above- and below-ground competition during the first three to five years after establishment. Targeted herbicide application during this period can be effective in reducing competition from annual weeds and remaining grasses, which promotes seedling vigor. Consult your Iowa Department of Natural Resources district forester for specifics on herbicide selection and use. Several herbicides also are available for native grass or prairie seedlings.

Mowing and burning

Both the woody and native grass zones of an established buffer benefit from mowing during the early years of establishment. For the woody zone, mowing between the tree and shrub rows will help reduce shading by large weeds and should be conducted as needed during the growing season. Native grass and forb plantings benefit from mowing during the first growing season. This should be done at least twice during the growing season to a plant height of 8-12 inches. If possible, use a flail (stalk) chopper to minimize windrows of cut material that can cover and choke out young prairie plants. Fire also is an excellent maintenance tool for native grass and flower plantings. To reduce weed competition and encourage seedling vigor, controlled burns usually are conducted early in the spring. Always develop a prescribed burn plan prior to burning. Assistance is available through your USDA Service Center.

Replanting and reseeding

Replanting and reseeding are important maintenance practices during the first few years following establishment. An annual inspection should be conducted to identify areas in need of replanting/reseeding.

For More Information

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