

Vegetation Buffer Strips in Agricultural Areas



What are Minnesota's requirements for buffers?

Listed below are the requirements for buffers under the shoreland management rules and the drainage law. Both of these sets of rules are managed by local governmental units:

- In shoreland districts, agricultural areas adjacent to lakes, rivers, and streams require a buffer strip of permanent vegetation that is 50 feet wide unless the areas are part of a resource management system plan.
- For any new ditches or ditch improvements, the land adjacent to public ditches must include a buffer strip of permanent vegetation that is usually 1-rod (16.5-foot) wide on each side.

For details on law changes in 2007, see Minnesota Statute 103E.021.

Where can farmers find assistance to meet the state's requirements?

Farmers may find information related to installing and funding buffer strips by contacting their county soil and water conservation district (SWCD). Refer to the SWCD directory of local offices: <http://www.bwsr.state.mn.us/directories>. Information about funding through the Conservation Reserve Program (CRP) is available from the Natural Resources Conservation Service (NRCS). Refer to the NRCS web site: www.nrcs.usda.gov

For more information on drainage ditch buffers, see the Board of Water and Soil Resources website for a copy of the 2006 Public Drainage Ditch Buffer Study (pdf format): www.bwsr.state.mn.us/about-bwsr/publications

Why are buffer strips needed to protect soil, water, and habitat?

Vegetation buffers are strips of land with permanent vegetation designed to intercept stormwater runoff and minimize soil erosion. Buffers can reduce the amount of sediment and pollutants carried by runoff to nearby lakes, wetlands, or streams. Soil particles accumulating as sediment in a lake can suffocate organisms and reduce sunlight needed by aquatic life. Sediment often carries pollutants such as phosphorus, a nutrient used in fertilizer. These

nutrients cause excessive growth of algae and aquatic plants, deplete the oxygen level of water, and degrade water quality. Soil microbes and grass in buffer strips, however, can facilitate the transformation and uptake of these pollutants, thus protecting surface water resources.



A vegetation buffer strip along with bank protection could have reduced erosion and the loss of valuable cropland.

Benefits of buffers to farmers and natural resources

Farmers use buffer strips and other best management practices, such as winter cover crops, to help control soil erosion on their land. Buffers help trap snow and reduce wind erosion of topsoil. The benefits of buffers to farmers include reduced flood damage to crops, reduced erosion and sediment loss, and reduced ditch maintenance costs. In addition, buffer strips can eliminate end rows and provide turn areas for farmers' machinery during fieldwork.

The benefits to surface water resources and habitat of fish and wildlife from buffer strips in agricultural areas include the following:

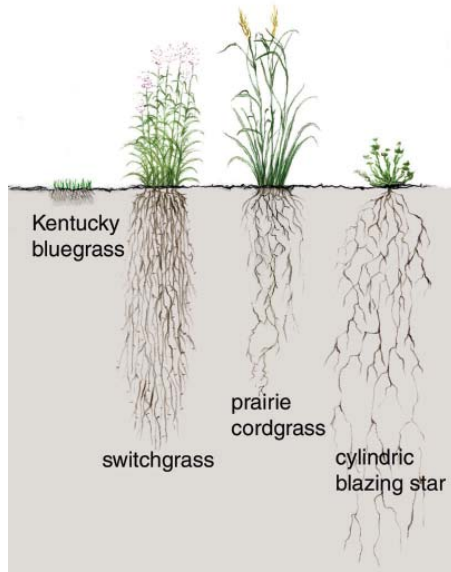
- **Water quality.** Buffers may intercept or remove pollutants and sediment in the following percentages from runoff: 50 percent or more of nutrients and pesticides, 60 percent or more of some pathogens, and 75 percent or more of sediment.
- **Stream protection.** Buffer vegetation helps stabilize a stream by reducing streambank erosion. Buffers that provide a shaded environment along a stream help moderate water temperature, which improves conditions for coldwater fish species.
- **Habitat enhancement.** Buffers are a source of food, nesting cover, and shelter for many wildlife species, such as songbirds. Continuous buffers also provide connecting corridors that enable wildlife to move safely from one habitat area to another.



Buffers of trees, shrubs, and grasses protect this stream.

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Trends and characteristics of effective vegetation buffers



Native grasses, unlike turf grass (Kentucky bluegrass), intercept runoff and have long roots to encourage infiltration, minimize erosion, and stabilize streambanks.

Use of buffers by farmers and landowners. Riparian strips of grass, trees, or shrubs protect perennial or seasonal streams and ditches. Historically, farmers have cleared these riparian areas to increase tillable area for growing crops. A newer trend is to restore the land closest to streams, rivers, and other vulnerable waterways by planting native vegetation. The Conservation Reserve Program provides financial incentives to help farmers be good environmental stewards of their land.

Buffer width and plants. The buffer's width and the plants selected for the buffer influence its effectiveness. To control pollution



(top and bottom) Buffer strips between crops and drainage ditches help stabilize ditch slopes.

from runoff, a buffer should be at least 100 feet wide, according to some scientific literature, with an additional 2 feet of width for every 1 percent of slope. Deep-rooted grasses or native plants are the most effective buffer vegetation for minimizing the impacts of sheet flow runoff from surrounding agricultural fields. Where wind is a factor, trees and shrubs growing in the buffer increase the buffer's ability to prevent wind from eroding valuable topsoil.

Buffer strip maintenance. A grass buffer strip in an agricultural setting or a riparian buffer strip (along a stream or lake) functions effectively if it is well maintained:

- Grass buffer strips should be inspected periodically so that eroded areas are identified, repaired, and reseeded.
- Weed control by mowing and prescribed burns may be needed in the buffer until native vegetation is well established. Contact the local soil and water conservation district for details.
- Fertilizers, pesticides, or animal wastes should not be applied to the buffers nor is it needed by native vegetation.
- Limited grazing by livestock in the buffer strip may be allowed if it is controlled to avoid erosion.



Prescribed burn is used to encourage growth of native vegetation.

DNR Contact Information



DNR Waters website lists Area Hydrologists:
<http://mndnr.gov/waters>

DNR Waters in St. Paul:
500 Lafayette Road
St. Paul, MN 55155-4032
(651) 259-5700

DNR Information Center

Twin Cities: (651) 296-6157
Minnesota toll free: 1-888-646-6367
Telecommunication device for the deaf (TDD): (651) 296-5484
TDD toll free: 1-800-657-3929

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