*Editor's note: This is the fourth in a series of five monthly op-ed articles that are sent to newspapers across Iowa. The articles in this series discuss in detail various nutrient reduction methods outlined in the Iowa Nutrient Reduction Strategy and the costs and benefits of each potential method.*

## Creating a Multifunctional Landscape with Buffers

*By Jacqueline Comito, PhD*

The Iowa Nutrient Reduction Strategy (NRS) advocates using multiple tools to improve Iowa's water quality. Previous articles in this series have highlighted wetlands and cover crops—two important and highly beneficial tools for improving water quality and maintaining healthy Iowa farmland. For producers looking for a comparatively easy conservation tool to implement or a tool to complement existing conservation practices, buffers are attractive options.

Over the last few years, many producers have decided against planting buffers or have even converted existing buffers to row crops to take advantage of high grain prices. While the desire to maximize profits by planting valuable grain on all available land is understandable, the long-term economic and environmental benefits of employing conservation practices like buffers will likely outweigh the short-term gains from high grain prices. Instead of viewing land productivity solely in terms of revenue, producers should consider land productivity as the sum of many functional benefits that buffers provide for one low cost.

Buffers are strips of permanent vegetation strategically placed in and around row crops. These buffer strips act as sponges during rain events, slowing down water flow and capturing sediment, nutrients, and other pollutants. Like Iowa's native prairie, the grasses used in buffer strips have deep roots that hold soil in place, and stiff stems that slow the flow of runoff water, helping water infiltrate down into the soil. As the water is slowed, sediment, nutrients, and other pollutants are captured in the grass buffer strip.

According to the NRS, buffers can reduce nitrate loads by 91 percent and phosphorus loads by 58 percent. Because they are edge-of-field techniques, the NRS notes that buffers do not have a direct effect on row crop yields.

Like many of the tools proposed in the NRS, buffers are not only exceptionally effective at reducing nutrient loads and improving water quality, but they provide many additional environmental and economic benefits. Even small buffers can produce a number of multifunctional benefits disproportional to the amount of land used. As a result, even small land use changes by farmers can make a big difference.

As one of the most economical conservation best management practices, buffers are quite a bargain for farmers. They require minimal land conversion and, after establishment, require little maintenance. According to Iowa State University researchers, it costs between $24 and $35 per year to convert one tenth of every row crop acre from annual crop to prairie. While these costs may be higher when factoring in lost row crop revenue, Conservation Reserve Program (CRP) contracts often reduce buffer establishment costs by more than 80 percent. Therefore, farmers may only pay $3 to $5 annually for each row crop acre including a prairie buffer.

Buffers provide a number of environmental benefits. In addition to improving water quality by slowing the flow of water and capturing sediment and nutrients, buffers also provide food and habitat for a number of beneficial animal species. These species include natural predators for crop pests, pollinators, songbirds, and game animals. In fact, the *Carroll Daily Times Herald* recently reported that local pheasant hunters' favorite hunting areas are being converted to row crops from CRP buffers.

Perennial buffer plants can also have agricultural uses. Farmers can use grassy buffer zones for livestock grazing or harvest grasses for hay. Additionally, perennial grasses and short rotation woody crops can be harvested for biomass feed stock. Initiatives such as the University of Iowa's Biomass Partnership Project and similar industry projects that involve co-firing biomass with coal indicate that there is a growing market for perennial energy biomass sources in Iowa.

Buffers are easy to manage, inexpensive, and effective tools for improving Iowa's water quality, and they also offer many additional environmental benefits and economic opportunities. If you're looking for an easy first step in farmland conservation or a compliment to your existing conservation practices, there's no better place to start.

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