Filter Strips

Nebraska Conservation Planning Sheet No. 9

NRCS Natural Resources Conservation Service

revised December 2006

What is a filter strip?

A filter strip is an area of grass used to reduce sediment, nutrients, pesticides and other contaminants from entering surface water.

How filter strips help

A properly functioning filter strip consisting of well-established herbaceous vegetation with proper stem density will intercept the flow of runoff before it enters environmentally sensitive areas such as streams or wetlands.

As runoff water is slowed, undissolved contaminants, sediment and sediment-adsorbed contaminants will become deposited within the filter strip vegetation.

Dissolved contaminants are also captured within filter strips if runoff flow is slowed sufficiently that infiltration occurs within the filter strip.

Contaminants which are trapped by the filter strip will generally become less harmful to the environment as they break down due to natural biological and chemical processes and/or are taken up by filter strip vegetation.

Filter strips, which are established between cropland and environmentally sensitive areas, will reduce sedimentation and help preserve water quality and aquatic habitat and also maintain the water-storage capacity of reservoirs. They also act as a buffer by preventing pesticides and nutrients from being applied adjacent to or directly into water bodies.

Filter strips are often established along the edges of fields replacing sometimes marginal cropland. Where practical, these filter strips can be planted to vegetation that is suitable for harvest as forage, allowing the area to retain value from agricultural production.

Vegetation can also be selected that is beneficial to wildlife thus providing recreational value to the landuser.

Where the practice applies

This practice applies in areas situated below cropland, grazingland or disturbed land where protection of environmentally sensitive areas is desirable.

Planning your filter strip

A filter strip is part of a conservation management system that may include a combination of practices designed to maintain sustainability and productivity of the land and associated natural resources including the soil, water, air, plants and animals. Practices that might be included in the management system include:

- Conservation Crop Rotation
- Residue Management
- Contour Farming
- Diversion
- Terrace
- Grassed Waterway
- Pesticide Management
- Nutrient Management
- Prescribed Burning
- Fence
- Field Border
- Use Exclusion
- Forage Harvest Management
- Upland Wildlife Habitat Management

For assistance in planning a conservation management system and designing a filter strip, contact your local Natural Resources Conservation Service office.

Design Considerations

For maximum effectiveness, flow across the filter strip should be as uniform as possible. Land shaping and grading may be necessary to establish the desired uniformity and should be completed prior to the establishment of vegetation for the filter strip.

The minimum size that a filter strip should be established is one acre of filter strip per each 30 acres of contributing drainage area, and no less than 20 feet wide for gentle slopes (less than 3% slope); or, no less than 30 feet wide for more severe slopes (greater than 10%).

Increasing the width of the filter strip will increase the potential for capturing particulates and increase the potential for carbon sequestration.

There should be sufficient land treatment planned or in place in the contributing drainage area so that the average annual sheet and rill soil loss for the drainage area is less than 10 tons per acre per year. (Less than 5 tons per acre per year preferred).

Establishment Considerations

During establishment of vegetation, prevention of runoff water from entering the filter strip is desirable. Consider the use of temporary diversions for this purpose.

The seedbed should be reasonable smooth, friable and firm. Best stands are obtained using a grassland type of drill.

Plant species and varieties should be selected that are adapted to the site. Species that are tolerant to herbicides being applied to adjacent cropland should be used.

Seed mixtures for new seedings should be a minimum of 40 Pure Live Seed per square foot. Warm season seed mixtures should contain at least 60 percent sod-forming, stiff stemmed species (Switchgrass, Prairie sandreed, Prairie cordgrass, Big bluestem and Indiangrass). Mixtures containing cool season grasses should contain at least 40% sod-forming, stiff stemmed species (Pubescent wheatgrass, Intermediate wheatgrass, Western wheatgrass).

Where enhancement of wildlife habitat is an objective, vegetation should contain a minimum of three grass species (preferably native, warm season) with a forb component (alfalfa, sweetclover, etc.).

Optimal time of planting will vary depending upon whether warm or cool season grasses are being planted and location. Warm season grasses should be planted as a dormant planting or in the early spring and cool season grasses in the spring or fall.

New seedings should not be hayed or grazed until vegetation is fully established. Annual grasses and broadleaf weeds that are hindering establishment should be controlled by mowing or spraying.

Maintaining the practice

Limit access to farm equipment, traffic and livestock, as needed, to minimize damage to the filter strip.

Periodic harvest of filter strip vegetation is desirable if needed to encourage dense growth and upright growth habit. This can also be accomplished using prescribed burning when an approved burn plan has been developed.

The filter strip should be inspected after intense storm events. Repair any gullies that have formed. Remove unevenly deposited sediment accumulations, and reseed disturbed areas.

Regrade the filter strip area as necessary to maintain flow uniformity across the area. Re-establish filter strip vegetation after grading.

Controlled grazing is permissible in the filter strip when it is compatible with and not detrimental to filter strip function. However, some conservation programs may not allow grazing or haying. Check program rules before haying or grazing.

For more information refer to the Nebraska Field Office Technical Guide (eFOTG) Section IV, Conservation Practice Standard–Filter Strip, (393) http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=NE, or visit your local Natural Resources Conservation Service office.