

Crops, Creeks & Sloughs

managing riparian areas in and around cropland



What is a Riparian Area?

Riparian areas are portions of the landscape strongly influenced by water. You can recognize them by the water-loving plants along rivers, streams, lakes, springs, wetlands, sloughs and seeps. The plants growing in riparian areas are usually very different from the adjacent cropland and pastureland. Lush growth of grasses, sedges, cattails, shrubs and trees characterize riparian areas. The kinds of plants growing in a riparian area vary depending on whether the riparian area is surrounding a wetland, lake, large river or small creek. As the surrounding photos demonstrate, riparian areas also look different depending on what part of the province they are found in.

Riparian areas make up only 2 - 5% of the total land base. However, they are very important ecologically, socially and economically.



Why are Riparian Areas Important?

Healthy riparian areas perform many important functions in our landscape. They:

- ◆ Trap and store water, thus recharging groundwater reserves
- ◆ Decrease the magnitude of floods and reduce damage from high water levels
- ◆ Filter runoff water as it moves towards the water body, thereby improving water quality
- ◆ Trap and store sediments as well as protect banks and shorelines from erosion
- ◆ Provide habitat for fish, wildlife and plants
- ◆ Offer shelter and forage for livestock production
- ◆ Slowly release water from shallow groundwater to add moisture to adjacent crops and forage.

Riparian areas provide important benefits to surrounding croplands. Read on to find out how riparian areas enhance cropping systems and how you can manage your riparian area and croplands to maximize these benefits.



The Links Between Crops and Riparian Areas

How do Riparian Areas Help Me and My Crops?

- ◆ Water in riparian areas infiltrates through the ground and spreads both outwards and downwards. This does two things; it recharges the local groundwater reserves and creates increased soil moisture in the surrounding area. This has direct benefits for the surrounding crops, resulting in higher crop yields.
- ◆ Riparian areas, along with grassed waterways (natural drainage paths in fields), can reduce soil and bank erosion. This adds to the stability of croplands.
- ◆ The deep fertile soils in river valleys were originally created by riparian areas. The lush vegetation traps sediment and nutrients to build a highly productive soil for crops.
- ◆ Riparian areas trap nutrients and agricultural chemicals found in runoff from fields, and reduce the risk of contamination of water sources, especially for downstream neighbours.
- ◆ Intact wetlands and riparian areas reduce the spread of salinity problems. When a wetland is drained and cultivated, it can act as a source of minerals and salts to adjacent areas, making the adjacent area less suitable for crop production.



However, riparian areas can only deal with so much. Sensible cropping practices should avoid overloading riparian areas so that they can continue to function and provide benefits to surrounding crops.

What makes a **Healthy** Riparian Area?

A healthy, well-functioning riparian area provides many more benefits than an unhealthy one. Riparian areas vary in their health for a variety of reasons.

Is your riparian area healthy?

If it is, you should see:

- ✓ Lush vegetation including a variety of native plants such as grasses, sedges, cattails, and layers of shrubs and trees
- ✓ Stable, well-vegetated bank and/or shorelines
- ✓ Very little or no bare soil
- ✓ Few or no weeds



Healthy



Unhealthy

What is a Buffer?

Think of a buffer as the “filling” that is sandwiched between your crop and the adjacent riparian area. Buffers can greatly increase the effectiveness of riparian areas. There are many different types of vegetation that make effective buffers. For example a buffer could be a strip of native grasses, a non-native grass/legume mix or even a shelterbelt of berry-producing shrubs or trees. In addition to protecting the riparian area, buffers usually trap snow, adding further moisture to your croplands. Buffers of 30 m wide are adequate in most situations, but wider strips may be needed in steep areas.



There is no buffer between the cropland and the riparian area.



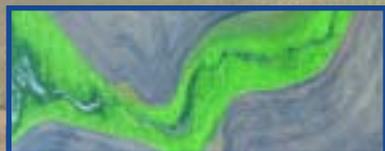
This buffer helps to increase the effectiveness of the riparian area and therefore benefits surrounding croplands

How Can You Help Riparian Areas Do Their Job?

Here are some tips to help you maintain a healthy riparian area:

- ◆ Keep the riparian area in as natural a state as possible. Retain the native plants that are adapted to living in riparian areas. A thick tangle of shrubs, cattails, sedges and trees is highly effective at removing nutrients, trapping sediment and stabilizing shorelines and banks.
- ◆ Minimize compaction of riparian soils by livestock, vehicles and equipment. Compaction means that less water can infiltrate through the riparian soils. This reduces the amount of water entering groundwater reserves and increases runoff.
- ◆ Leave wetlands intact rather than draining and/or cropping them. See our “**Value of Wetlands**” fact sheet for more information on how wetlands benefit croplands, improve local climate and improve water quality.
- ◆ Retain the full width of the riparian area AND add a buffer between it and your crop.
- ◆ Don't overload riparian areas with runoff containing sediment, nutrients and pesticides/herbicides.

Cropping Practices to Consider



Grassed Waterways

Grassed waterways (along natural drainage paths in a field) help to reduce erosion and filter sediments.

Managing Hay Forage

If you have perennial forage crops, ensure carryover is left for fall, winter and spring. For grazed forages in the riparian area, manage the timing and extent to leave ample residue/litter and avoid wet, trampled soils.



Application Practices

Proper nutrient and pesticide management should be practiced. Apply only the amounts required by the crop. Stay well back from riparian areas and water bodies.



Permanent Cover

Where soils are prone to wind and water erosion, consider replacing annual crops with perennial hay and forage next to riparian areas. That may also eliminate tillage problems in wet conditions

There are many ways you can lessen the impact of cropping on riparian areas and increase the effectiveness of riparian functions.



Reducing Summerfallow

Reducing the amount of summerfallow will prevent soil erosion and reduce the amount of nutrients and sediments in runoff.

Conservation Tillage

Direct seeding, minimum and zero tillage all decrease the risk of erosion and slow down runoff.



Forages in Rotation

Forages help to improve soil structure and reduce runoff, erosion and nutrient losses. The beneficial effects of forages last after annual crops are reintroduced into the rotation.



Cover Crops

Cover crops are a good way of reducing runoff, soil erosion and nutrient leaching.

Resources

about Riparian Areas & Croplands

Cows and Fish

Cows and Fish is a non-government program that fosters a better understanding of how improvements in management of riparian areas can enhance landscape health and productivity for the benefit of ranchers, farmers and others who use and value riparian areas. Cows and Fish helps landowners, producer groups, municipalities and local communities address riparian management issues on a watershed basis. We do this by increasing awareness through education and the use of a number of "tools" such as demonstration sites and health assessment of riparian areas. Riparian health assessments provide baseline information about riparian health and function and help develop plans to address specific land use issues.

Materials Available from Cows and Fish

- ◆ *Caring for the Green Zone - Riparian Areas and Grazing Management*
- ◆ *Riparian Areas: A User's Guide to Health*
- ◆ *Riparian Health Assessment for Streams and Small Rivers - Field Workbook*
- ◆ *Riparian Health Assessment for Lakes, Sloughs and Wetlands - Field Workbook*
- ◆ Fact Sheets Series, including: *Value of Wetlands, Facing the Issues, Tools for Riparian Management, Water Quality, Lakes and Wetlands, Biodiversity, Invasive and Disturbance-caused Plants in Riparian Areas*
- ◆ Other material is available on our website (see below).

Other Organizations

Alberta Reduced Tillage LINKAGES (RTL)

This partnership of industry, conservation and education organizations and government works in conjunction with local organizations and helps to sponsor field days and demonstrations of reduced tillage. The partnership also initiated a Direct Seeding Factsheet Series, published by Alberta Agriculture - Conservation and Development.

J. G. O'Donoghue Bldg.
206, 7000 - 113 Street
Edmonton, AB T6H 5T6
Phone: (780) 422-7922
www.reducedtillage.ca

Alberta Conservation Tillage Society

This non-profit society promotes the importance of soil conservation to farmers, agriculture extension personnel, and the general public.

Box 41029 114 Street 40 Avenue
Edmonton, AB, T6J 6M7
Phone: 780-842-2225
Fax: (403) 227-1925

Soil & Water Conservation Society Alberta Chapter

This group promotes public awareness and education in Alberta concerning the conservation of soil, water and related natural resources

c/o Alberta Agriculture-Conservation and Development Branch
206, 7000 - 113 Street
Edmonton, AB, T6H 5T6
Phone: 780-427-3588
Fax: 780-422-0474



Government Resources

Agriculture and Agri-Food Canada:

Riparian Areas: An Undervalued Saskatchewan Resource available from:
www.agr.gc.ca/pfra/land/riparea.htm

Alberta Sustainable Resource Development

Managing Riparian Areas available from:
www3.gov.ab.ca/srd/land/publicland/s/publan22.html

Alberta Agriculture, Food and Rural Development:

Water Quality and Riparian Areas on Your Land available from:
www.agric.gov.ab.ca/sustain/water/waterways/cen97-1.html

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Working with producers and communities on riparian awareness

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Cows and Fish Partners

Producers & Community Groups, Alberta Beef Producers, Trout Unlimited Canada, Canadian Cattlemen's Association, Alberta Agriculture, Food & Rural Development, Alberta Sustainable Resource Development, Alberta Environment, Fisheries & Oceans Canada, Prairie Farm Rehabilitation Administration, Alberta Conservation Association

Funding Associates include  AESA, CARDF, CABIDF, Habitat Stewardship Program

