SARE Project ANC93-17

Your Guide on How to Make a

Riparian Buffer Strip

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What is a riparian buffer zone?

A riparian buffer zone is an association of plants, trees, shrubs, forbs, and grasses, that grow along the banks of our waterways and lakes. These stream and lake plant associations are part of hundreds of miles of natural riparian buffer zones. Well known tree species such as willows, silver maple and green ash are common. Shrubs, including ninebark, dogwood, chokecherry, and grasses like reed canarygrass and switchgrass are part of an important soil stabilization and filter mechanism of the riparian zone.

Where do I find a riparian buffer zone, and how do we use them?

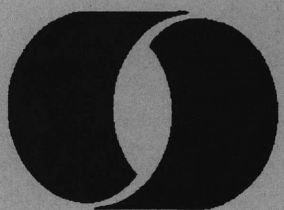
The riparian buffer zone is primarily thought of as the land next to a stream, delineated from the water's edge to a distance away from the watercourse where the stream normally floods. Riparian buffer zones are found along any creek or stream that flows most of the year or at least during wet seasons such as spring and early summer. Riparian buffer zones are associated with waterways that may range from a tiny creek to a major river such as the Mississippi.

How is a riparian buffer zone important to me?

People use the riparian buffer zones in many ways for pleasure and profit. A riparian buffer zone is nature's way of stopping cropland soil from entering directly into the stream, and by improving water quality by filtering out excess fertilizer or pesticides from the upslope cultivated lands. The riparian buffer zones provide food, cover, homes, and movement corridors for our wildlife, and habitat for fisheries as well. Without riparian buffer zones our floods would be worse, our water quality poorer, our diversity and numbers of wildlife and fish more sparse, our landscape visually dull, and our homes and health at greater risk.

How do I know if a riparian buffer zone is right for me?

Any watercourse or pond that does not have a continuous mixture of trees, shrubs, and a grass buffer that together comprise a band of vegetation 66 feet or more in width, may call for the establishment of a constructed riparian buffer strip. Basically if you feel that there is need to improve the soil and water conservation activities on land adjacent to your stream and are willing to invest some time and money, then a riparian buffer strip is right for you.



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Planning a riparian buffer strip

There are certainly streams wherever you go that would benefit by the installation of a riparian buffer strip. Perhaps you own or rent property, or are the manager of land that would benefit from RBS planning:

Eight points in planning a riparian buffer strip.

1. Determine your objectives

Do you want to reduce soil and agrichemicals from entering the stream? Do you want to provide wildlife and fish with habitat? Do you want annual and periodic grass and tree products from the buffer strip? Do you want to provide a pleasing environment of clean water and wooded greenscapes for family and friends to enjoy? Do you want to improve your quality of life, and the quality of life for friends and neighbors that are part of the stream's watershed?

2. Consider the problem(s)

What is the existing condition of the stream, soil erosion, water quality, or wildlife? Are cattle grazing to the stream edge and getting water directly from the stream? Are crops grown right to the stream edge?

3. Assess site resources

What plants already exist within 1 to 100 feet of the stream? What is the condition of the vegetation? What impact has grazing and/or crop tillage had on the soil, vegetation and streambank? How many field tiles enter the stream? Are there natural wet areas, seeps, or springs?

4. Determine the potential natural condition (PNC)?

In other words, what could the riparian zone look like , if nature had its way? Consider what the riparian buffer zone might look like if natural processes dominated, and human actions helped the ecosystem. The PNC sets the ideal riparian buffer zone target which is useful in planning for the re-establishment of a properly functioning riparian zone buffer zone of permanent trees, shrubs, and grasses.

5. Assess the actions required to restore proper functioning conditions (PFC)

What do you feel needs to be done on the land along your stream to provide soil and water conservation benefits and other benefits desired such as wildlife? Remember it is important to keep in mind the value of the structured buffer strip. A proper sequence of trees, shrubs, and grasses is critical to the proper function of the filtering system.

6. Evaluate alternatives

Consider different ways of using trees, shrubs, and permanent grasses in creating a riparian buffer strip. Consider plant types, costs, special actions to stabilize the streambank, who to contact for technical advice, when to install a buffer strip, and exactly how to design it.

7. Implrement your tree-shrub-grass riparian buffer strip

Follow the design recommendations provided by IStART in this guide, or adapt them to fit your situation.

8. Monitor the results

How does the environment change? Is the buffer strip trapping soil? Is the water quality in the stream improving? Are wildlife using the buffer strip? Are you obtaining the desired grass and wood products such as biomass for on-farm energy use?

KEY FACTORS CHECKLIST

The following checklist has been developed to assist you in assessing the need for, planning, and designing a constructed riparian buffer strip.

1. Identify landowner objectives

- Major interest is improved soil & water quality?
- Wildlife habitat is important?
- Enhanced quality of life?
- Annual or periodic cash flow is needed (perennial grass or trees)?

2. Identify riparian buffer zone problems

- Condition of land along stream?
- Presence of grazing?
- Row cropping to the stream edge?
- Condition of streambank?
- Condition of stream channel bottom?
- Condition of water quality?
- Presence of field drain tiles?

3. Assess site resources

- Soils? (erosion hazard, drainage class, land capability class)
- Depth to water table? (normal stream level)
- Flooding potential? (frequency, duration, & magnitude)
- Size of watershed?
- Order of the stream?
- Existing vegetation? (trees, grasses, shrubs, crops)
- Bank stability? (angle of the bank, height of bank to normal water level)
- Topography within 300 ft of stream? (% slope, aspect)
- Grazing? (frequency, number of head, access to water)
- Field tiles present?
- Wildlife habitat?
- Fisheries?

4. Determine "potential natural condition" (PNC) of the stream segment

- What was past land use? How long?
- Past vegetation cover? (before settlement, 20-50 years ago)
- What would the site become if left alone?
- What upslope conservation practices are needed?
- What minimum acceptable width (MAW) (50-150 ft) is needed to produce the 'living filter'?
- What actions are needed in the 50-100 foot zone along the stream to produce the 'living filter'?
- What actions are needed to stabilize banks?
- What actions are needed to handle drainage tile water?
- What actions are needed to improve in-stream conditions?
- What actions are needed to improve wildlife habitat?

5. Evaluate Alternatives

- Plant selection to fit site filtering and/or stabilization functio? (trees, shrubs, grasses, forbs)
- Tile wetland options?
- Willow post - soil bioengineering options?
- Sources of plant material?
- Rotational grazing options?
- Timetable of development? (phase-in, quick)
- Equipment?
- Land & labor?
- Capital? ($)
- Cost-share programs? (Gov't & NGO's)

6. Implement Best Alternative and Monitor

- Follow the 'Designing a Multi-species Riparian Buffer Strip' guide from ISU.
- Set up an informal or formal monitoring plan to evaluate the expected functioning of the riparian buffer strip.