

Agricultural Practices and Procedures that also Apply in Urban Settings

**Urban Riparian Symposium
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Sources of Ag NPS Pollution

- Sediments
- Nutrients
- Pesticides
- Bacteria



The ACT

Avoid, Control or Trap

When performing conservation planning with landowners we emphasize a “systems approach” to address their resource concerns. When considering water quality, we encourage producers to select practices that address the concept for Avoiding, Controlling, or Trapping pollutants, or “ACT.”

Avoid

Avoidance helps manage nutrients and sediment source control from agricultural lands, including animal production facilities. Practices such as **Nutrient Management**, **Cover Crop**, and **Conservation Crop Rotation** help producers avoid pollution by reducing the amount of nutrients available in runoff or leaching into water bodies and watersheds. Practices such as cover crops and crop rotation help take up nutrients to avoid potential runoff and pollution. Crop rotations that include differing crops, such as legumes, can limit amounts of commercial nutrients applied.

Control

Land treatment in fields or facilities that prevents the loss of pollutants includes practices such as conservation tillage and residue management, which improve infiltration, reduce runoff, and control erosion. Specific practices such as **No-till/Strip/Till/Direct Seed**, **Mulch Tillage**, and **Ridge Till** are foundation practices to recommend to producers. Practices such as **Cover Crop** will also do double duty by helping with Avoidance as well as Controlling. Other facilitating practices, such as **Terraces** or **Stripcropping**, help control erosion and may manage runoff to reduce nutrients loading.

Trap

The last line of defense against potential pollutants is to trap them. Practices such as **Contour Buffers**, **Filter Strips**, **Riparian Buffers** and the suite of **wetland practices to create, enhance, and/or restore wetlands** all serve to trap and uptake nutrients before entering water bodies.

Conservation Buffer Practices

Alley Cropping
 Contour Buffer strips
 Cross Wind Trap Strips
 Field Borders
 Filter Strips
 Grassed Waterways
 Herbaceous Wind Barriers
 Riparian Forest Buffers
 Vegetative Barriers
 Windbreaks/shelterbelts



Field Borders



Field Borders - a band or strip of perennial vegetation established on the edge of a cropland field.

Filter Strips

Filter Strips - an area of grass or other permanent vegetation used to reduce sediment, organics, nutrients, pesticides, and other contaminants from runoff and to maintain or improve water quality.



Grassed Waterways



Grassed Waterways - a natural or constructed vegetated channel that is shaped and graded to carry surface water at a non-erosive velocity to a stable outlet that spreads the flow of water before it enters a vegetated filter.

Riparian Forest Buffers



Riparian Forest Buffers - an area of trees and shrubs located adjacent to streams, lakes, ponds, and wetlands.



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Residue Management Practices

No Till
Reduced Till



No Till

- Limiting soil disturbance to manage the amount, orientation and distribution of crop and plant residue on the soil surface year around.
- This practice only involves an in-row soil tillage operation during the planting operation and a seed row/furrow closing device. There is no full-width tillage performed from the time of harvest or termination of one cash crop to the time of harvest or termination of the next cash crop in the rotation regardless of the depth of the tillage operation.
- The STIR value shall be no greater than 20.





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Practices Utilized on Cropland

Conservation Crop Rotation

Nutrient Management

Pest Management

Terraces

Contour Farming

Grassed Waterway

Residue Management

Conservation Buffers



Nutrient Management

Managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments.



Purpose

- To budget, supply, and conserve nutrients for plant production.
- To minimize agricultural nonpoint source pollution of surface and groundwater resources.
- To properly utilize manure or organic by-products as a plant nutrient source.
- To protect air quality by reducing odors, nitrogen emissions (ammonia, oxides of nitrogen), and the formation of atmospheric particulates.
- To maintain or improve the physical, chemical, and biological condition of soil.

Integrated Pest Management



Integrated Pest Management -managing agricultural pest infestations (including weeds, insects, and diseases) to reduce adverse effects on plant growth, crop productions, and environmental resources.





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Practices Utilized on Irrigated Cropland

Irrigation Land Leveling

Irrigation Water Management

Conservation Crop Rotation

Residue Management

Conservation Buffers

Nutrient Management

Pest Management



Irrigation Water Management



Determining and controlling the rate, amount, and timing of irrigation water in a planned and efficient manner.

Inefficient irrigation can cause water quality problems. In arid areas, for example, where rainwater does not carry residues deep into the soil, excessive irrigation can concentrate pesticides, nutrients, disease-carrying microorganisms, and salts- all of which impact water quality- in the top layer of the soil. Improving water use efficiency can reduce Non Point Source pollution from irrigation.



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Practices Utilized on Grazing Lands

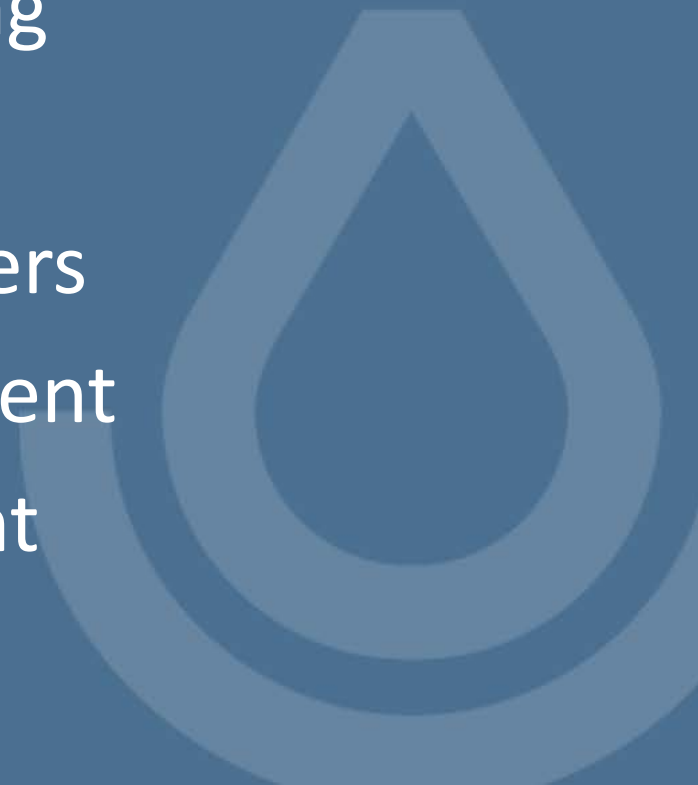
Prescribed Grazing

Water Source

Conservation Buffers

Nutrient Management

Pest Management



Prescribed Grazing

The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified purpose.

- Overgrazing exposes soils, increases erosion, encourages invasion by undesirable plants and reduces the filtration of sediment necessary for building stream banks, wet meadows, and floodplains.
- To reduce the impacts of grazing on water quality, farmers and ranchers can adjust grazing intensity, keep livestock out of sensitive areas, provide alternative sources of water and shade, and revegetate rangeland and pastureland.



Summary

Water Quality Benefits

Reduced :

- Soil Erosion
- Sediment yield
- Water turbidity
- Sediment absorbed pesticides
- Rainfall runoff

Summary

Other Benefits

Improved:

- Wildlife habitat
- Dissolved oxygen in streams
- Visual resources
- Soil tilth
- Soil organic matter
- Water holding capacity
- Water infiltration
- Moisture conservation



HEALTHY RIPARIAN AREAS IMPROVE WATER QUALITY

Riparian Areas are our last line of defense. Thick vegetation helps to trap debris, sediments, nutrients, and other pollutants before they enter the stream.



HEALTHY UPLANDS IMPROVE WATER QUALITY



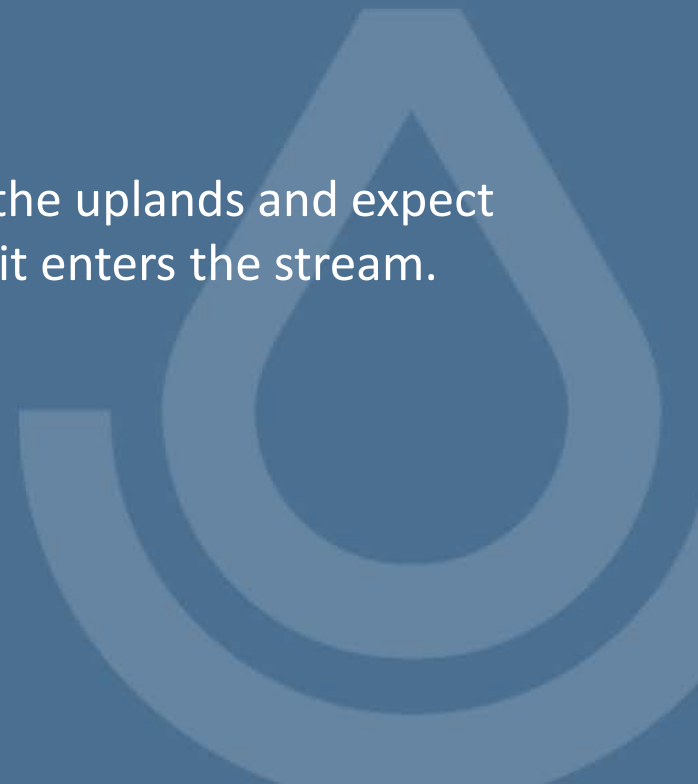
Runoff that occurs on the uplands, is channeled into drainages along highways, and then runs into the stream at a crossing completely misses the filtering effects of the riparian buffer.



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HEALTHY UPLANDS IMPROVE WATER QUALITY

We just can't continue to do whatever we please on the uplands and expect the riparian area to filter and clean our runoff before it enters the stream.



Questions ?

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