Vegetated Drainage Ditches

What is a vegetated drainage ditch or grassed waterway? How does it work?

Vegetated drainage channels have proven successful in the southeastern U.S. for reducing sediment and pesticide concentrations—especially water soluble pesticides—in agricultural drainage water. Grasses or other vegetation established within a drainage channel can filter runoff water. Living and decomposing plants and roots and associated microorganisms trap sediments and take up excess nutrients and pesticides.

The Natural Resources Conservation Service (NRCS), Solano Resource Conservation District (RCD) or Dixon Resource Conservation District (RCD) staff can work with you to adapt this practice for your property.

What are the benefits of vegetated drainage ditches and grassed waterways?

- Improve runoff water quality. Vegetation can remove 38% – 98% of pesticides in drainage water in an appropriately designed ditch.
- Compared to many other Best Management Practices, very little cropland has to be removed from production.
- Protect against invasion by weeds by reducing on-farm bare areas.
- Stabilize ditch banks, reducing erosion.

How do you install a vegetated drainage ditch or grassed waterway?

The design for each ditch or waterway, including the cross-section, length, and vegetation type, will depend on cropping practices, soil type, and field configuration. The design will also depend on cost, the intended lifespan of the ditch, and available equipment.

Existing drainage ditches or waterways may be used, or new ditches may be excavated with a ditcher, scraper, or road grader.

Possible designs include “V” ditches (which are the easiest to excavate and the most compact) or shallow, wide “U”-shaped ditches (which are the most effective).

The methods and materials for establishing vegetation will be similar to those for any planting project. A variety of plants can be used – ranging from native perennials to annuals. Native plants that can tolerate periods of drought, including sedge and rush species, are well suited for vegetated ditches. For ditches that will be excavated yearly, less-costly annual species may be a better choice.

Vegetated drainage ditches may be used in combination with other Best Management Practices, like sediment traps or ponds. At sites with large amounts of sediment runoff, placing a sediment trap upstream of the vegetated ditch can prolong the useful life of the ditch.

The cost for installation of a vegetated drainage ditch will vary for each project, depending on the length of the ditch, the amount and type of seed used, and the amount of excavation needed.

Maintenance

Vegetated ditches require some ongoing maintenance that can be managed with standard farm equipment. This may include:

- Monitoring and maintaining the vegetation.
- Adjusting the design as needed to accommodate changes in cropping practices or field configuration.
- Clearing any accumulated sediment or debris that may block the flow of water.
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- Periodic excavation or scraping to remove sediment deposits and maintain waterway capacity.
- Mowing and/ or burning. Weed control.
- Reseeding vegetation to repair damage by machinery, herbicides, or erosion.
- Limiting the length of time the ditch holds standing water for mosquito control.

Vegetated drainage ditch and grassed waterway planning and available financial support

Advice on planning and installing is available through NRCS and Dixon and Solano RCDs.
Financial assistance is available through NRCS’s Environmental Quality Incentive Program (EQIP).

In this field, furrows drain from top to bottom of the picture. Water is captured in the tail ditch and passes through an up-stream sediment trap from right to left before entering the vegetated ditch enroute to the stream (see arrows).

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