Solano RCD

Agricultural Water Quality
Best Management Practices

Vegetated Drainage Ditches

What they are

Vegetated drainage ditches are typical agricultural drainage ditches planted with a selection of plants which act as binding sites for pesticides and fertilizers that have run off fields during irrigation or storm events. The ditches serve as a filter for agricultural runoff, reducing movement of agricultural chemicals from the field to the waterway.

How they work

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.

Vegetated drainage ditches have proven successful in the southeastern U.S. for reducing sediment and pesticide concentrations—especially water soluble pesticides—in agricultural drainage water.

Yolo RCD is currently testing vegetated drainage ditches on local farms to figure out how this Best Management Practice can be designed to work with California's cropping practices, agricultural chemicals, soils, and climate.

Benefits

Vegetated drainage ditches:

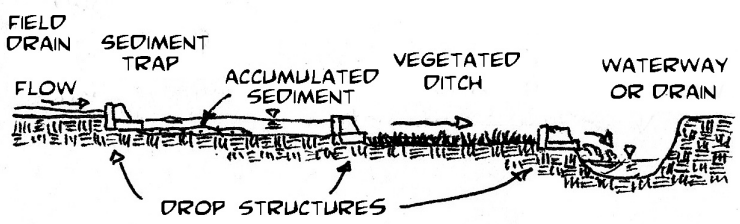
- Improve runoff water quality. Vegetation can remove 38% – 98% of pesticides in drainage water in an appropriately designed ditch.
- Protect against invasion by weeds by reducing on-farm bare areas.
- Stabilize ditch banks, reducing erosion.
- Turn liabilities into assets. Naturally situated in low spots that are often wet and not agriculturally productive, vegetated drainage ditches supplant an otherwise weedy maintenance problem with a non-weedy filter for farm run-off

Installation & Cost

Yolo and Solano RCDs are experimenting with vegetated ditch designs, including ditch cross-section, length, vegetation type, and configuration in the field.

The design and type of vegetation will also depend on costs, the intended lifespan of the ditch, and available equipment.

In some cases, 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 hydrophytic plants that can tolerate periods of drought, such as certain sedge and rush species, are well suited for vegetated ditches.

Vegetated drainage ditches may be used in combination with other Best Management Practices, like sediment traps or ponds. At sites with high concentrations of sediment in runoff water, it may be necessary to couple vegetated ditches with an upstream sediment trap to reduce sediment deposition that can smother the vegetation to prolong the useful life of the ditch.

The cost for installation of a vegetated drainage ditch or grassed waterway is estimated to be around $1000 or more. Costs will vary for each project, depending on the length of the ditch, the amount and type of seed used, the amount of excavation needed, and any irrigation required.

Maintenance

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

- 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

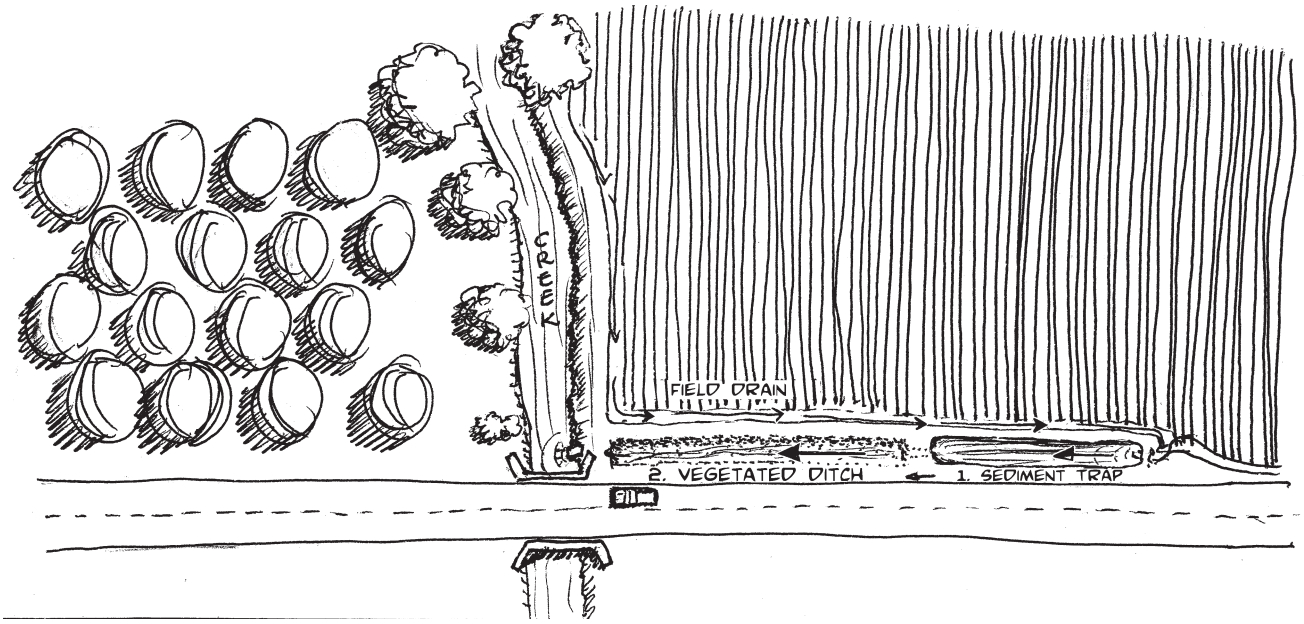
Planning and available financial support

Advice on planning and installation is available through the Yolo County and Solano Resource Conservation Disricts and the Natural Resources Conservation Service.

Financial assistance for implementing this practice is available through:

The Yolo-Solano Agricultural Water Quality Management Support Program, which can reimburse the costs of materials and time.

The Environmental Quality Incentives Program (EQIP) which provides cost-sharing for private land conservation.



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 enering the vegetated ditch enroute to the stream (see arrows).

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