

607A- Vegetative Agricultural Drain
Farm Bill Implementation – Water Quality



Description

Vegetative Agricultural Drains are field ditches that are designed to maximize contact time between runoff (stormwater and irrigation return flows) and plants for the trapping and processing of sediment, pesticides and nutrients. The Vegetative Agricultural Drain is located at the bottoms of fields and at the end of furrows (single edge of field drain).

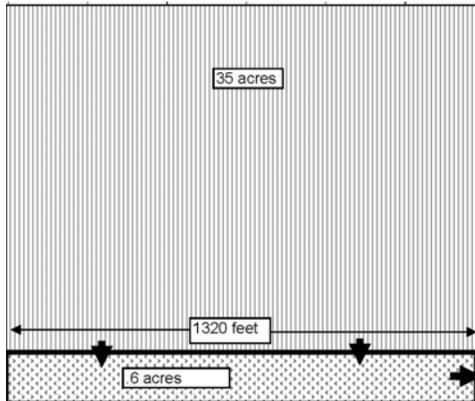
Requirements

One-half acre of Vegetative Agricultural Drain (VAD) is required for each 35 acres of row crop production drainage area. The VAD is 1' minimum below the original outlet elevation, with one foot of the VAD remaining undrained (retention storage), and 1' minimum allowed for detention storage.

Maintenance

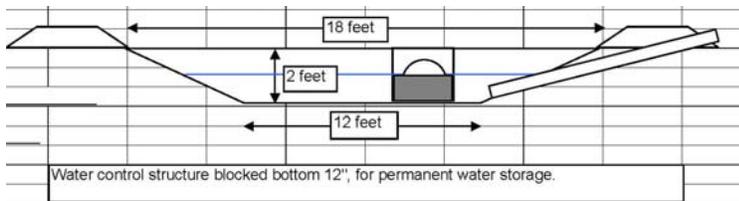
The VAD will require the removal of sediment from time to time to maintain the 1' undrained retention storage volume. Plants should be mowed or burned every 3 years to maintain vigor.

System Planning



Example: the VAD should be placed to receive runoff from the field(s). Typically the VAD would be located in an existing drainage ditch (with enlargement), or placed at the edge of a field.

For fields with existing pads and pipes, the VAD could be placed in the lower portion of the field, with the existing outlet pipe being used as the outlet control.



Example: typical VAD cross-section indicating 2 foot minimum depth, 12' minimum bottom, and 1' undrained depth.

Planting Guidance

Planting is not required, however, if planting is done, only native species should be planted. 'Halifax' maidencane would be a recommended planting, as well as 'Alamo' switchgrass.

System Minimum Requirements

- 0.5 acres VAD per 35 acres of drainage area
- 1' minimum depth below the outlet elevation, with minimum of 1' detention storage above outlet elevation
- 12' minimum bottom width

Technical Contacts

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References:

Kröger R., Moore M.T., Locke M.A., Cullum R.F., Steinriede R.W. Jr., Testa S. III, Bryant C.T., and Cooper C.M. 2009. Evaluating the influence of wetland vegetation on chemical residence time in Mississippi Delta drainage ditches. *Agricultural Water Management* 96:1175-1179.

Moore M.T., Kröger R., Locke M.A., Cullum R.F., Steinriede R.W. Jr., Testa S. III, Lizotte R.E. Jr., Bryant C.T., and Cooper C.M. Nutrient mitigation capacity in Mississippi Delta, USA drainage ditches. *Environmental Pollution* (Accepted- in press)

Kröger R., Holland M.M., Moore M.T., and Cooper C.M. 2006. Hydrological variability and agricultural drainage ditch inorganic nitrogen reduction capacity. *J. Env. Qual.* 36:1646-1652.

Jamie L. Whitten Plant materials Center <http://plant-materials.nrcs.usda.gov/mspmc/>
- Planting Guide <http://www.plant-materials.nrcs.usda.gov/pubs/mspmcpublguide99.pdf>

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