VEGETATED TREATMENT AREAS

Reducing soil, nutrient, & bacteria runoff from small hog farms

Background

Vegetated Treatment Areas (or VTAs) are composed of perennial grasses used to improve runoff water quality associated with livestock, poultry, and other agricultural operations. 70-75% of swine operations nationwide are considered 'small' with less than 100 head. Producers need practical, low-cost waste management options to protect local water resources. VTAs are inexpensive alternatives compared to standard waste management systems (i.e. lagoons, etc.), and they help reduce soil, nutrient, and bacteria runoff from small operations with small acreage.

Small swine operations need an inexpensive alternative to standard waste management systems.

Designing & Installing Your VTA

- Establish permanent grass vegetation in the VTA downslope of the operation.
- Take advantage of seedbed preparation, starter fertilizer, and/or irrigation if needed for establishment.
- Select warm and cool season grasses adapted to the soils and climate that can withstand wetting or brief submerged conditions.

The VTA size will depend on upon the number of animals, rainfall, slope, soils, and vegetation selection. A berm may be helpful in limiting outside water from entering the VTA. In Central Texas, we have found that having 500-1500 ft^2 of VTA area with year round vegetation per adult hog can significantly reduce nutrient loss in runoff; however, removal of solids may be required to achieve water quality objectives when VTA area/hog is less than 750 ft^2. Technical assistance for the design of VTAs may be available from your local NRCS Field Office or local TSSWCB Regional Office.

Winter oats and winter wheat are efficient cool season plants for your VTA.

Managing Your VTA

- Do not use additional fertilizer; instead utilize nutrients from water runoff to the VTA in order to ensure vigorous plant growth.
- Harvest vegetation as appropriate to encourage dense growth and to remove nutrients that are contained in the plant tissue.
- Time hay cutting and removal to allow grasses to regrow to a sufficient height to effectively filter effluent late in the growing season.
- Reseed cool season grasses seasonally if necessary to ensure perennial living cover.
- Exclude all livestock, including grazing, from the VTA.
- Take annual soil samples and compare them to previous years to provide information on available nutrients and may be used to help determine if the nutrients are accumulating.

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TSSWCB Texas State Soil and Water Conservation Board
USDA NRCS United States Department of Agriculture Natural Resources Conservation Service
USDA United States Department of Agriculture Agricultural Research Service
Texas A&M AgriLife
Texas Water Resources Institute make every drop count
Texas Pork Producers Association

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Vegetated Treatment Areas (or VTAs) are composed of perennial grasses used for the treatment of runoff.

Benefits

- Improves surface water quality[1]
    - Reduced total N concentration 47-76% (average = 65%)
    - Reduced total P concentration 64-88% (average = 73%)
    - Reduced *E. coli* concentration 34-93% (average = 72%)
    - Reduced N load 34-81% (average = 67%)
    - Reduced P load 32-91% (average = 69%)
    - Reduced *E. coli* load 29-94% (average = 72%)
- Provides and maintains food, cover, and shelter for wildlife

Estimated Installation Costs

- $275-$310/acre depending on seed mix
- Additional costs for initial dirt work may be required as well

Available Financial Assistance Programs

- Environmental Quality Incentives Program (EQIP): http://www.nrcs.usda.gov/wps/portal/nrcs/site/tx/home
- Conservation Stewardship Program (CSP): http://www.nrcs.usda.gov/wps/portal/nrcs/site/tx/home
- Water Quality Management Plans (WQMP): http://www.tsswcb.texas.gov/en/swcds

For Technical Assistance, Contact:

- Local Natural Resources Conservation Service: http://www.nrcs.usda.gov/wps/portal/nrcs/site/tx/home
- Local Soil and Water Conservation District: http://www.tsswcb.texas.gov/en/swcds
- Local County Extension Agent: http://counties.agrilife.org/

Helpful Links & References

- Higgs, K.D., R.D. Harmel, K. Wagner, P.K. Smith, R.L. Haney, D.R. Smith, and R. Pampell. 2015. Vegetated treatment area effectiveness at reducing nutrient runoff from small swine operations in central Texas. *Applied Engineering in Agriculture* 31(4):621-629.
- Texas NRCS Conservation Practice Standard design details: https://efotg.sc.egov.usda.gov/references/public/TX/VegetatedTreatmentAreaCode635.pdf.

[1] Wagner, K., R. Pampell, and R.D. Harmel. 2017. Improving runoff water quality from small pork production facilities using vegetative treatment areas. College Station (TX): Texas Water Resources Institute. TR-501.