Development and Implementation of an Environmental Training Program for Manure and Compost Haulers/Applicators in the Texas High Plains

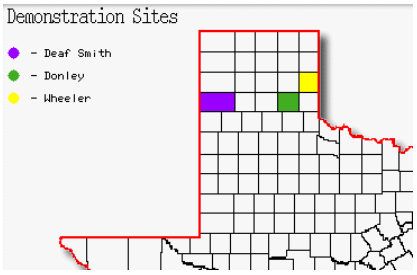
PURPOSE: To facilitate the development and implementation of an education, training and demonstration program to improve the understanding of environmental protection principles by manure/compost haulers, equipment operators, certified crop advisors (CCAs) and crop producers across the Texas Panhandle.

PROJECT TEAM: Texas Cattle Feeders Association (TCFA), Texas AgriLife Extension Service, Texas AgriLife Research, West Texas A&M University and the Texas State Soil and Water Conservation Board (TSSWCB).

PROJECT TERM: A three-year project from 2010 through 2012.

PROJECT GOALS:

- Assess the current level of environmental knowledge of custom manure/compost haulers and the extent of training provided to equipment operators.
- Design and develop an environmental training curriculum for custom manure/compost hauler owners, equipment operators, CCAs and crop producers, including materials in Spanish.
- Promote adoption of sound water quality protection practices by custom manure/compost haulers, equipment operators, CCAs and crop producers through program delivery in at least two pilot watersheds.
- Utilize workshops, field days and hands-on demonstration of best management practices and ensure availability of education materials through website.



DEMONSTRATION SITES: Several field demonstration sites have been selected in Deaf Smith, Donley and Wheeler counties. In-field and down-gradient soil samples will be collected annually at all locations. A surface water quality runoff study will be established in Deaf Smith County to evaluate differences, if any, between conventional fertilizer, manure and compost.

WEBSITES: Additional details are available by accessing the temporary project websites (permanent homes under construction):
http://www.tsswcb.state.tx.us/en/managementprogram/TCFAEDU
http://agrilife.org/amarilloeqnrp/environmental-quality-areas/water-quality/land-application-training-for-manure-contractors-and-applicators/

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PROJECT BACKGROUND:
The land application of manure/compost is a viable organic nutrient option for crop production across the Texas High Plains. Within 150 mile radius of Amarillo, 5.8 million head of beef cattle are fed in feedyards; this is about 30% of the nation's fed cattle production. The cattle feeding industry has served as an important economic driver in this region since the 1960s. Manure has been primarily used as a nutrient and soil amendment on cropland. Primary crops in the region include corn, wheat, cotton, alfalfa, peanuts, grain sorghum and hay.

The movement of manure/compost to cropland is typically a three-way relationship consisting of a crop producer, a feedyard source of manure/compost and a third-party custom hauler/applicator. Over the past five decades, custom manure and compost companies have become an important component in the operation of feedyards and farms that purchase manure or compost. Application rates are determined by the crops to be grown, residual nutrients and the soil recommendations of crop advisors and soil-testing laboratories at land grant universities. Manure and compost companies generally have a fixed rate for loading and spreading (i.e., $3.50 per ton) and a hauling charge (i.e., $0.25 per ton per mile). The cost of manure/compost to the crop producer serves as an important self-limiting tool to prevent the over-application of nutrients.

Manure and compost companies have strived over the years to provide a service to both feedyards and crop producers in the most cost-effective manner possible. Unfortunately, little attention to the environmental impacts has been paid by this important segment of the cattle feeding industry. This project, through training and demonstrations, will establish a program to provide for long-term implementation of best management practices (BMP) to be utilized during the land application of manure or compost. A comprehensive environmental training program using printed materials, videos and web-based materials (in both English and Spanish) will heighten the environmental awareness of custom manure and compost owners and their employees. In addition, crop producers will benefit by participating in the workshops, field days and seminars and will have greater assurance that using manure or compost in their nutrient management programs has tremendous benefits and can be accomplished in a manner that is protective of the environment, including water quality.

In the 2000 and 2002 Texas 303(d) Lists, two watersheds in the Texas High Plains (Sweetwater Creek and Buck Creek) were identified as impaired based on elevated bacteria levels. These creeks continue to be listed on the 2008 Texas 303(d) List. The source of the bacteria is not yet known and, at least for Buck Creek, is currently being investigated through TSSWCB project 06-11 *Watershed Protection Plan Development for Buck Creek*. These two watersheds will be used as pilot watersheds for the "beta-testing" of the environmental training curriculum to be developed through this project. A targeted educational program to assist manure and compost applicators will increase understanding of appropriate BMPs.

This project will be the first of its kind that targets a diverse group of stakeholders and is specific to the independent business relationship (feedyards, manure/compost haulers, certified crop advisors and crop producers) and cropping systems that are implemented in the Texas High Plains. TCFA is uniquely situated to facilitate the development and implementation of this environmental training curriculum. TCFA represents the cattle feeding industry in Texas, Oklahoma and New Mexico and has nearly 200 feedyard members with a total membership around 5,000. As a result, this environmental training program has the potential, if successful in Texas, to expand to Oklahoma and New Mexico.

The project will notify custom manure haulers of the availability of on-site technical assistance and field training for owners and operators, and encourage implementation of USDA-NRCS conservation practices by landowners through the Environmental Quality Incentives Program (EQIP). In addition, TCFA, with assistance from local SWCDs and the TSSWCB Hale Center Regional Office, will promote the availability of technical assistance and encourage the development and implementation of TSSWCB-certified Water Quality Management Plans (WQMPs).

Funding for this project was provided through a Clean Water Act §319(h) nonpoint source grant from the Texas State Soil and Water Conservation Board and the U.S. Environmental Protection Agency.