

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

Texas Cattle Feeders Association
Texas AgriLife Extension Service
Texas AgriLife Research
West Texas A&M University
FY09 CWA Section 319(h)

Quarterly Report Number 2 (cumulative)

Covering accomplishments during January through June, 2010
July 15, 2010

TASK 1: Project Administration

Subtask 1.1 TCFA/ AgriLife Extension will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 15th of January, April, July and October. QPRs shall be distributed to all project partners. (Start Date: Month 1; Completion Date: Month 36)

- **Procedures have been implemented to collect project information and work accomplished for each task and subtask.**
- **First quarterly report – submitted to TSSWCB on April 13, 2010.**
- **Second quarterly report – submitted to TSSWCB on July 15, 2010.**

20% Complete – On-going

Subtask 1.2 TCFA will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly. (Start Date: Month 1; Completion Date: Month 36)

- **Contract in place between TSSWCB and TCFA.**
- **Subcontract in place between TCFA and Texas AgriLife Extension Service/Texas AgriLife Research.**
- **Subcontract in place between TCFA and West Texas A&M University.**
- **TCFA controller has been briefed on the project and will be the lead person for tracking, billing and fiscal reporting.**

7% Complete – On-going

Subtask 1.3 TCFA/ AgriLife Extension will attend and participate in public meetings, such as watershed stakeholder meetings, Clean Rivers Program meetings, and Soil and Water Conservation District (SWCD) meetings, in order to communicate project goals, activities and accomplishments to affected parties. (Start Date: Month 1; Completion Date: Month 36)

- **The first Project Advisory Group meeting and project kick-off was held June 16, 2010 at the Texas A&M Research and Extension Center in Amarillo. Slide sets presented at the meeting are attached hereto and will be provided to our project webmaster, Jaclyn Tech, for subsequent publication. A list of attendees (n=26) is attached hereto.**
- **The next meeting of the Project Advisory Group is scheduled for January 5, 2011.**

5% Complete – On-going

Subtask 1.4 The TCFA/ AgriLife Extension will host coordination meetings through video conferencing or other means with TSSWCB, project partners, and any subcontractors, as appropriate, at least quarterly in the first year to discuss project activities, project schedule, communication needs, deliverables and other requirements. Meetings will be held as needed in the second and third year of the project. (Start Date: Month 1; Completion Date: Month 36)

- **Project management team conference calls were held on April 26, 2010, and June 1, 2010, with representatives from TSSWCB.**

- **A project management team (TSSWCB/TCFA/Texas AgriLife Extension Service/Texas AgriLife Research/West Texas A&M University) planning meeting was held following the Project Advisory Committee meeting on June 16, 2010.**

4% Complete – On-going

Subtask 1.5 TCFA/AgriLife Extension will develop and disseminate project informational materials, including, but not limited to, flyers, brochures, letters, news releases, and other appropriate promotional publications. As appropriate, TCFA will include information about the project in the TCFA e-Newsletter, in TCFA membership mailings, at the TCFA Annual Convention, and at the Annual Meeting of Texas SWCD Directors (TSSWCB must approve all announcements, letters and publications prior to distribution). (Start Date: Month 1; Completion Date: Month 36)

- **A news release coinciding with the Project Advisory Group/project kick-off meeting on for June 16, 2010, was published in the Amarillo Globe-News on June 23, 2010. The article is available on the web at http://www.amarillo.com/stories/062310/new_news9.shtml . The release was also picked up by *Manure Manager* magazine for their on-line edition on June 22, 2010; the weekly TSSWCB e-update on June 23, 2010; and the TCFA newsletter on June 25, 2010..**

5% Complete – On-going

Subtask 1.6 AgriLife Extension will develop (months 1-3), host and maintain (months 4-36) an internet webpage for the dissemination of project information. (Start Date: Month 1; Completion Date: Month 36)

- **Ms. Jaelyn Tech (Texas Water Resources Institute), who assembled and managed the Buck Creek 319(h) web site, has agreed to serve as our project webmaster. A Texas A&M AgriLife internal contract has been submitted for final approval of the arrangement. A Linux-based, 100GB virtual machine/web server was to have been established for the project by now, but internal delays with the Information Technologies group on the main Texas A&M campus have pushed this task back. In the meantime, materials are being collected for immediate publication.**

3% Complete – On-going

Subtask 1.7 AgriLife Extension will hire a Project Manager to coordinate and manage the work of project partners and subcontractors, to facilitate the project advisory group, to assist with the environmental knowledge assessment, to lead the development of the environmental training curriculum, to lead program delivery, and to assist with BMP effectiveness monitoring. (Start Date: Month 1; Completion Date: Month 4)

- **Mr. Kevin Heflin, Extension Associate, has been hired internally as the Project Manager of record, and he has been involved with all site tours and project activities. Additional support will be provided by Gary Marek and Jack Bush (Research Associates) and Brad Wilhite (Technician II) as needed.**

18% Complete – On-going

Subtask 1.8 TCFA, in collaboration with project partners, will develop and submit a Final Report at the culmination of the project. This final report will document project performance related to each project goal and measure of success. A draft of this final report will be submitted to TSSWCB for review prior to completing the document. (Start Date: Month 34; Completion Date: Month 36)

0% Complete – On-going

TASK 2: Quality Assurance

Subtask 2.1 AgriLife Extension / AgriLife Research will develop a QAPP for activities in Task 9 consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5) and the TSSWCB Environmental Data Quality Management Plan.

All monitoring procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in the TCEQ Surface Water Quality Monitoring Procedures, Volume 1: Physical and Chemical Monitoring Methods for Water, Sediment, and Tissue (RG-415) and Volume 2: Methods for Collecting and Analyzing Biological Assemblage and Habitat Data (RG-416). (Start Date: Month 1; Completion Date: Month 6)

- **A project QAPP is under development. The QAPP will include provisions consistent with other recently developed QAPPs for monitoring, sample collection and laboratory analysis.**
- **The QAPP cannot be finalized and submitted until all field sites have been selected and all sampling/analysis activities decided. As detailed below, project leadership has conducted three separate site-reconnaissance tours with County Extension Agents (CEAs) in Deaf Smith, Wheeler, and Collingsworth Counties; and project leadership met in Amarillo on July 7, 2010, to prioritize sites desired and activities planned for each site. CEAs will be engaged following the July 7 meeting to contact landowners and request access to desired sites.**
- **CEAs actively engaged in selecting and arranging our demonstration sites are Rick Auckerman (Deaf Smith), Dale Dunlap (Collingsworth), Kenny Brdecko (Wheeler), and Leonard Haynes (Donley).**

15% Complete – On-going

Subtask 2.2 AgriLife Extension / AgriLife Research will submit revisions and necessary amendments to the QAPP as needed. (Start Date: Month 7; Completion Date: Month 36)

0% Complete – On-going

TASK 3: Environmental Knowledge Assessment

Subtask 3.1 AgriLife Extension will prepare a survey instrument, as appropriate, to assess the current level of environmental understanding and employee training offered by manure/compost haulers. (Start Date: Month 1; Completion Date: Month 5)

- **We have decided to prepare two survey instruments. The first will be an in-person interview of manure haulers to describe current practices and assess spreader-calibration activities. The second will be directed to farmers and will assess basic knowledge of soil and manure testing as it relates to water quality.**
- **A set of survey questions has been adapted from an existing, working document on manure quality developed by Sharon Sakirkin. Further development is planned for the third quarter.**

10% Complete – On-going

Subtask 3.2 AgriLife Extension will update existing lists of manure/compost haulers in the Texas High Plains and conduct a pre-survey by mail, phone or in person (if needed) with haulers. (Start Date: Month 4; Completion Date: Month 9)

- **An existing list of custom manure/compost haulers/applicators developed by TCFA and Texas AgriLife Extension Service as part of past projects is being reviewed and updated.**

50% Complete – On-going

Subtask 3.3 AgriLife Extension will establish current state-of-knowledge by haulers for environmental management and training through compilation of pre-survey results and development of an interpretive summary. (Start Date: Month 9; Completion Date: Month 11)

0% Complete – On-going

Subtask 3.4 AgriLife Extension will conduct a post-survey of manure/compost haulers to assess adoption and implementation of BMPs and employee/equipment operator training programs. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

TASK 4: Project Advisory Group

Subtask 4.1 TCFA will meet with AgriLife Extension specialists and Extension agents in Potter, Lubbock and Wilbarger counties and USDA-NRCS Zone 1 personnel to brief them on the objectives of the project, to solicit nominations for the advisory group and to identify potential demonstration sites and potential crop producer collaborators. (Start Date: Month 1; Completion Date: Month 3)

- **CEAs and NRCS Zone 1 personnel attended the June 16 project kickoff meeting in Amarillo and were briefed on the objectives of the project. Attendees provided guidance for preferred BMP emphasis. CEA-facilitated watershed tours were conducted in Deaf Smith (Tierra Blanca and Palo Duro Creeks; June 22), Collingsworth (Buck Creek; July 1), and Wheeler (Sweetwater Creek; June 14) Counties.**

5% Complete – On-going

Subtask 4.2 TCFA will identify members for the project advisory group. The advisory group will, at a minimum, consist of CAFO operators, manure and compost haulers, livestock industry organizations (i.e., Texas Farm Bureau (TFB), Texas Association of Dairymen (TAD), Texas and Southwestern Cattle Raisers Association (TSCRA), commodity organizations (i.e., Corn Producers Association of Texas, Plains Cotton Growers, Texas Grain Sorghum Producers Board), AgriLife Extension, TSSWCB, SWCDs, Texas Department of Agriculture (TDA), U.S. Department of Agriculture- Natural Resources Conservation Service (USDA-NRCS), Certified Crop Advisors (CCAs) and crop producers, stakeholders of the pilot watersheds (Buck Creek and Sweetwater Creek) and demonstration site cooperators. (Start Date: Month 1; Completion Date: Month 6)

- **The Project Advisory Group met in Amarillo on June 16, 2010.**

70% Complete – On-going

Subtask 4.3 TCFA shall host meetings and/or conference calls of the project advisory group at least twice in the first year and annually thereafter. (Start Date: Month 6; Completion Date: Month 36)

- **The first Project Advisory Group meeting was June 16, 2010, in Amarillo.**
- **The second Project Advisory Group meeting is tentatively scheduled for January 5, 2011, with the location TBD.**

15% Complete – On-going

Subtask 4.4 The project advisory group will discuss and prioritize criteria for selection of demonstration sites and provide input on the evaluation of BMP effectiveness. BMPs for protection of wellheads and sensitive areas, type of manure/compost application equipment and measurements of compaction, nutrient stratification and nutrient availability in no-till vs. conventional tillage, nitrogen mineralization rates, and other demonstration concepts. (Start Date: Month 6; Completion Date: Month 12)

- **Discussions of this kind took place during the project kickoff meeting on June 16, 2010. Preferred emphases were tillage, manure and soil sampling, credit for residual soil nutrients, and nutrient mobilization/immobilization.**

40% Complete – On-going

Subtask 4.5 The project advisory group shall review project objectives, provide input on project activities, provide input into development of an environmental training curriculum for manure/compost haulers, program delivery, and CEU processes. (Start Date: Month 11; Completion Date: Month 16)

0% Complete – On-going

TASK 5: Manure Spreader Calibration Kits

- Subtask 5.1** TCFA will identify options for field calibration of manure/compost spreader trucks. Options may include single-pass calibration using the calibration kits to be assembled in Subtask 5.2 and/or calibration using a whole-truck method (scale weights and area to which manure/compost has been applied). (Start Date: Month 4; Completion Date: Month 9)
- **TCFA staff have initiated a search of existing materials and methods to identify options and assemble prototype kits for field calibration.**

5% Complete – On-going

- Subtask 5.2** TCFA will assemble manure/compost spreader truck calibration kits. Thirty kits to be assembled initially. Distribute one calibration kit to each manure/compost hauling company in Texas High Plains at no charge at public project events. Additional kits will be provided at a nominal charge. (Start Date: Month 9; Completion Date: Month 16)

0% Complete – On-going

- Subtask 5.3** AgriLife Extension will verify field-scale technique for whole-truck calibration. This method would serve as a complement to the single-pass calibration kits and would require gross wt., tare wt., effective spreader width and length of spreader travel. (Start Date: Month 5; Completion Date: Month 12)
- **Texas AgriLife Extension has scheduled a field scale calibration event for September 2010. Calibration kits will be assembled and used to demonstrate calibration techniques with raw and composted cattle manure.**

20% Complete – On-going

TASK 6: Curriculum Development

- Subtask 6.1** TCFA/ AgriLife Extension will produce educational materials, pamphlets and video (if appropriate) to provide for concise and accurate descriptions of manure calibration equipment options. Types of materials will be determined by the project advisory group (TSSWCB must approve all educational materials prior to distribution). (Start Date: Month 13; Completion Date: Month 36)
- **High Definition video and pictures will be taken at the field scale calibration event as described in subtask 5.3. Video and pictures will be used to produce educational materials detailing appropriate manure spreader calibration techniques.**

0% Complete – On-going

- Subtask 6.2** AgriLife Extension will deploy educational materials at a national scale through the Livestock and Poultry Environmental Learning Center and the Extension Community of Practice (www.extension.org). (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

- Subtask 6.3** AgriLife Extension will provide a template for field-level feedback from manure and compost haulers to verify implementation of single-pass and whole-truck methods. (Start Date: Month 32; Completion Date: Month 36)

5% Complete – On-going

TASK 7: Demonstration and Program Delivery

Subtask 7.1 Select 3 to 4 demonstration sites based on the recommendations of the advisory group. Factors in selection of demonstration sites may include crop types, soil types, manure vs. compost, application rates, location of water wells, ability to sample down-gradient soils and date of previous manure/compost application, if any. At least 1 demonstration site will be selected within the Buck Creek Watershed and at least 1 demonstration site will be selected within the Sweetwater Creek Watershed. (Start Date: Month 1; Completion Date: Month 9)

- **Initial contact has been made with County Extension Agents in several locations throughout the Texas High Plains to encourage them to begin identifying potential landowners to serve as project collaborators/demonstration sites.**
- **Potential demonstration sites have been identified in Donley, Wheeler, and Deaf Smith Counties following tours conducted by CEAs.**
- **A plan of action for each potential demonstration site has been discussed by PIs and will be conveyed to the CEAs before they meet with the landowners.**
- **County Extension Agents will be tasked with making first contact with landowners to determine willingness to cooperate.**

5% Complete – On-going

Subtask 7.2 Train custom manure hauler owners, equipment operators, certified crop advisors and crop producers on the principles of environmental management for land application of manure. (Start Date: Month 14; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.3 TCFA/ AgriLife Extension will host field days at each demonstration site at least once in Year 2 and once in Year 3. (Start Date: Month 13; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.4 TCFA will organize, in conjunction with all project partners, six seminars/workshops across the Texas High Plains for program delivery in Year 3. (Start Date: Month 13; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.5 TCFA will provide project results to state livestock organizations in Oklahoma, New Mexico, Kansas, Colorado and Nebraska. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

Subtask 7.6 TCFA will present results of the project to the Property Rights and Environmental Management Committee at a National Cattlemen's Beef Association Annual Convention. (Start Date: Month 29; Completion Date: Month 30)

0% Complete – On-going

TASK 8: Technical Assistance

Subtask 8.1 Utilize group workshops, field days and hands-on demonstration of BMPs and ensure availability of education materials through websites. 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). (Start Date: Month 8; Completion Date: Month 12)

0% Complete – On-going

Subtask 8.2 AgriLife Extension will establish a system of tracking and providing notifications on the availability of technical and financial assistance (i.e., mail, email, website subscription) to custom manure and compost haulers in the Texas High Plains region. (Start Date: Month 13; Completion Date: Month 36)

0% Complete – On-going

Subtask 8.3 TCFA, with assistance from local SWCDs, USDA-NRCS and the TSSWCB Hale Center Regional Office, will promote the availability of technical assistance and encourage adoption and implementation of USDA- NRCS conservation practices (or best management practices (BMPs)), described in the USDA-NRCS Field Office Technical Guide (FOTG) as effective at mitigating the environmental impact of manure/compost application.

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). A WQMP is a site-specific plan developed through and approved by SWCDs which includes appropriate land treatment practices, production practices, management measures, and technologies that prevent and abate agricultural and silvicultural nonpoint source pollution. The BMPs prescribed in a WQMP are defined in the NRCS FOTG. WQMPs afford agricultural producers an opportunity to comply with state water quality laws through traditional voluntary incentive-based programs.

TCFA, with assistance from local SWCDs and USDA-NRCS, will promote availability and utilization of cost-share funds through the EQIP State Resource Concern for AFO-CAFO Beef – Water Quality/Air Quality to aid in implementation of BMPs related to manure/compost application.

TCFA, with assistance from local SWCDs and the TSSWCB Hale Center Regional Office, will promote availability and utilization of cost-share funds through the WQMP Program (historically known as 503 cost-share) to aid in implementation of BMPs related to manure/compost application. (Start Date: Month 13; Completion Date: Month 36)

- **A project briefing/orientation conference call was conducted April 26, which included the field representatives for Soil and Water Conservation Districts and the USDA-Natural Resources Conservation Service – Zone 1 office (Lubbock/Amarillo region).**

5% Complete – On-going

Subtask 8.4 TCFA/ AgriLife Extension will explore options for future development of a certification program for manure and compost haulers based on the outcomes of the training and demonstration efforts of this project.. (Start Date: Month 32; Completion Date: Month 36)

0% Complete – On-going

TASK 9: BMP Effectiveness Monitoring

Subtask 9.1 TCFA/ AgriLife Extension and AgriLife Research, as appropriate, will establish control and treatment plots at one location in the Sweetwater Creek watershed, one location in the Buck Creek watershed and one location on the Caprock. Treatments may include application of manure and/or compost at single-year vs. multi-year agronomic rates. (Start Date: Month 6; Completion Date: Month 9)

- **Potential demonstration sites have been identified in each of the specified areas, as mentioned in subtask 7.1.**

5% Complete – On-going

Subtask 9.2 At one demonstration location, AgriLife Research will install automatic water samplers to collect runoff from the control and treatment plots. Water samples will be analyzed for nutrients and bacteria by the Texas AgriLife Research Laboratory at Vernon. (Start Date: Month 6; Completion Date: Month 9)

- **A potential demonstration site has been selected and a plan of action has been formalized for the CEA to present to the landowner.**

0% Complete – On-going

Subtask 9.3 At least annually, TCFA will collect soil samples from control and treatment plots using GPS grid soil sampling. Samples will be collected at the 0-6 inch depth and 6-24 inch depth across the grid. Composite samples will be submitted to a commercial soil testing laboratory for macronutrient, micronutrient, pH and organic matter. In a similar manner, soil samples will be collected at two distances down-gradient of the plots. Distances will be determined by site-specific topographic features of the site locations. (Start Date: Month 6; Completion Date: Month 36)

0% Complete – On-going

Subtask 9.4 Water samples will be collected by TCFA from all water wells located within the boundaries of the control and treatment plots as well as any water wells (where access is granted) within 500 feet down-gradient of the plot locations. Water samples will be analyzed for bacteria and nutrients. (Start Date: Month 6; Completion Date: Month 36)

0% Complete – On-going

Subtask 9.5 TCFA will collect representative manure and/or compost samples prior to all planned land application events. Samples will be analyzed by a commercial testing laboratory for macronutrients, micro nutrients and moisture content. Split samples will also be provided to AgriLife Research for the BST library. (Start Date: Month 6; Completion Date: Month 36)

0% Complete – On-going

Activities Planned for Next Quarter

- **Identify and select project demonstration sites/landowner cooperators.**
- **Launch an initial project webpage inclusive of basic project goals and tasks.**
- **Develop a draft questionnaire, for review and approval at the Project Advisory Group meeting, to be used for assessing current environmental knowledge of manure/compost haulers.**
- **Submit QAPP for comments**
- **Identify demonstration sites and execute land-use agreements.**
- **Assemble prototype field calibration kits.**
- **Evaluate field-scale calibration of manure spreading.**
- **Soil sample at demonstration sites.**
- **Install berms/diversions, flumes, and water-sampling equipment at one demonstration site.**
- **Provide interim progress report by email to Project Advisory Group.**