



**Texas State Soil and Water Conservation Board
CWA §319(h) Nonpoint Source Grant Program
FY 2008 Project 08-04**

Efficient Nitrogen Fertilization: Accounting for Field Nitrogen Mineralization

USDA-ARS

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Quarterly report

Quarter no. 2 From 1/1/2009 Through 3/31/2009

I. Abstract

New demonstration sites were established in Wichita Co. and Williamson Co. This brings to total number of private landowner cooperators to 7 in Archer, Hamilton, Bell, and Wichita, and Williamson Counties. The draft QAPP was completed and submitted to TSSWCB.

II. Overall Progress and Results by Task

Task 1: Project Administration

Subtask 1.1: USDA-ARS (Harmel) 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 posted on the project website and provided to all project partners. (Month 1-36)

The following actions have been completed during this reporting period:

- a) QPR Submitted **April 15, 2009.**

16% Complete

Subtask 1.2: USDA-ARS will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly. (Month 1-36)

The following actions have been completed during this reporting period:

- a) USDA National Finance Center will submit invoices to TSSWCB on their regular schedule.

16% Complete

Subtask 1.3: USDA-ARS will host coordination meetings or conference calls with TSSWCB, and any subcontractors as appropriate, at least bi-annually to discuss project activities, project schedule, communication needs, deliverables and other requirements. (Month 1-36)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Subtask 1.4: USDA-ARS (Harmel) will develop the project final report for submission to TSSWCB, EPA, and project partners. (Month 30-36)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Task 2: Conduct field trials on demonstration sites at the USDA-ARS Grassland, Soil and Water Research Center, Temple, TX

Subtask 2.1: Land management on demonstration sites. USDA-ARS (Haney) will establish 10 demonstration sites, including 5 control sites. On each site, tillage, weed and insect control, crop production, and fertilizer application including both organic and inorganic formulations, will be performed. The control sites will be treated the same as the other sites, except will receive no fertilizer. (Month 1-36)

The following actions have been completed during this reporting period:

- a) Rick provide info here. Accomplished harvest, planting, fertilizer application, etc. on what fields.

16% Complete

Subtask 2.2: Data collection on demonstration sites. USDA-ARS (Haney) will gather and record land management, crop yield, and economic data to demonstrate the economic benefits of reduced N application. (Month 4-30)

The following actions have been completed during this reporting period:

- a) Land management, crop yield, and economic data have been collected and are up to date.

16% Complete

Subtask 2.3: Soil sampling on demonstration sites. USDA-ARS (Haney) will collect annual soil samples for testing to determine plant available N. Monthly soil samples may also be collected to track within year plant available N changes. (Month 4-30)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Task 3: Conduct field trials on demonstration sites at the USDA-ARS Watersheds, Riesel, TX

Subtask 3.1: Land management on demonstration sites. USDA-ARS (Harmel) will establish 8 demonstration sites, including a control site. On each site, tillage, weed and insect control, crop production, and fertilizer application including both organic and inorganic formulations, will be performed. The control site will be treated the same as the other sites, except will receive no fertilizer. (Month 4-36)

The following actions have been completed during this reporting period:

- a) Corn was planted on 8 demonstration sites at the USDA-ARS Grassland, Soil and Water Research Center, Riesel, TX. Fields Y6, Y8, Y10, Y13, W12, W13, and SW-16 received fertilizer based on soil tests in the project. Field 7-1 (control) received no fertilizer.

16% Complete

Subtask 3.2: Data collection on demonstration sites. USDA-ARS (Harmel) will gather and record land management, crop yield, and economic data to demonstrate the economic benefits of reduced N application. (Month 4-30)

The following actions have been completed during this reporting period:

- a) Land management, crop yield, and economic data have been collected and are up to date.

16% Complete

Subtask 3.3: Soil sampling on demonstration sites. USDA-ARS (Harmel) will collect annual soil samples for testing to determine plant available N. Monthly soil samples may also be collected to track within year plant available N changes. (Month 4-30)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Subtask 3.4: In order to evaluate reductions in N runoff due to use of this enhanced soil test methodology, water quality data will be collected from the Riesel demonstration sites. Storm and base flow water quality samples will be collected and analyzed for $\text{NO}_3\text{-N}$, $\text{NH}_4\text{-N}$, and $\text{PO}_4\text{-P}$. Collection and laboratory analysis of this data is neither federally funded through this project nor utilized as non-federal match for this project. This corroboratory data, critical to documenting the water quality benefits of this project, shall be treated as Secondary Research Data (§B9) in the QAPP. (Month 4-30)

The following actions have been completed during this reporting period:

- a) Runoff N and P data were collected for the March 13, 2009 runoff event.

16% Complete

Task 4: Establish demonstration sites on private lands

Subtask 4.1: Land management on demonstration sites. Cooperators will perform tillage, weed and insect control, fertilizer application, and crop production on demonstration sites. All cooperators will set up at least one control plot from which to determine plant available N contributed by the soil with no fertilizer addition. Cooperators may also choose to establish plots that will be fertilized with N rates based on the enhanced N soil test. (Month 4-36)

The following actions have been completed during this reporting period:

- a) Chad Hajda (TSSWCB Regional Office) met with Daren Harmel on January 8, 2009, to discuss potential landowner cooperators in Williamson Co.
- b) Brant Hajda agreed to cooperate on this project (January 12, 2009). He established 3 sites on one of his fields in Williamson Co.
- c) Daren Harmel met with Barry Mahler on February 7, 2009, and established 3 demonstration sites on one of his fields in Wichita Co. Wheat was already planted in this field, so data collection will begin this summer after harvest.

16% Complete

Subtask 4.2: Data collection on control sites. Cooperators will gather and record land management and crop yield data for the demonstration sites. (Month 4-36)

The following actions have been completed during this reporting period:

- a) Data record sheets were provided to private landowner cooperators.
- b) Data are up to date.

16% Complete

Subtask 4.3: Soil sampling on demonstration sites. Cooperators or USDA-ARS (Haney or Harmel) will collect annual soil samples for soil test analysis to determine plant available N. (Month 4-30)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Subtask 4.4: Compensate cooperator/producers for establishing and managing demonstration sites on private lands. Specifically, cooperators/producers will be partially reimbursed (40%) for costs such as seed, fertilizer, fuel, and custom harvesting incurred to conduct land management and data collection on demonstration sites. Cooperators/producers will provide non-federal match (60%) for demonstration activities. (Month 4-36)

The following actions have been completed during this reporting period:

- a) Brant Hajda, Fred Schrank, and David Melde were reimbursed for fertilizer application and will provide non-federal match for other costs incurred.

16% Complete

Task 5: Conduct soil tests to estimate plant available N at all demonstration sites

Subtask 5.1: Soil processing and testing. At the USDA-ARS Grassland, Soil, and Water Research Laboratory in Temple, TX, USDA-ARS (Haney) will process and test soil samples from all demonstration sites. (Month 4-34)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Subtask 5.2: Comparison of N soil test methods. Plant available N estimates as determined with various N soil test methods will be compared to plant N uptake in control sites without fertilizer. (Month 4-36)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Task 6: Quality Assurance

Subtask 6.1: USDA-ARS will contract TWRI to develop a QAPP for activities in Tasks 2.3, 3.3, 4.3, and 5.1 consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5) (May 2006) and the TSSWCB Environmental Data Quality Management Plan (August 2007). (Month 1-3)

The following actions have been completed during this reporting period:

- a) Kevin Wagner, Rick Haney, and Daren Harmel met on February 13, 2009 to finalize the draft QAPP and submitted it to TSSWCB.

- b) Following the February 13 meeting, final revisions were made to the QAPP and it was submitted to the TSSWCB the same day.
- c) TWRI received comments from TSSWCB on March 17 and resubmitted the QAPP on March 24 once all comments had been addressed.
- d) The QAPP has been forwarded to EPA by the TSSWCB for final approval.

95% Complete

Subtask 6.2: TWRI will submit revisions and necessary amendments to the QAPP as needed. (Month 4-36)

The following actions have been completed during this reporting period:

- a) No progress to report.

0% Complete

Subtask 6.3: TWRI will develop and maintain a project website. (Month 4-36)

The following actions have been completed during this reporting period:

- a) The DRAFT project website was created by TWRI this quarter and provided to USDA-ARS for review on February 12.
- b) Once USDA-ARS comments were addressed, the website went online.
- c) The website link is <http://n-fertilization.tamu.edu>

0% Complete

III. Related Issues/Current Problems and Favorable or Unusual Developments

- a) Development of the QAPP was delayed by one quarter. This has delayed initiation of soil analysis under this project for this growing season and may require a no-cost extension if approval from EPA is not received quickly.

IV. Projected Work for Next Quarter

- a) Will be...