I. Abstract

This quarter, in-house windrow composting, litter application, soil and litter sampling, and sampling of volatiles was conducted in May 2012. A QAPP revision, work plan and budget amendments, and a no cost extension request were also submitted to the TSSWCB for approval. Runoff monitoring continued this quarter with only one very small event at one site occurring following litter application. Next quarter, development of the Extension fact sheet and presentation will be initiated once analysis of data from the May 2012 in-house windrow composting and application is complete.

II. Overall Progress and Results by Task

TASK 1: Project Administration

Subtask 1.1: TWRI 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.

The following actions have been completed during this reporting period:
   a. TWRI submitted the Quarter 11 progress report on July 13, 2012.

70% Complete

Subtask 1.2: TWRI will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.

The following actions have been completed during this reporting period:
   a. As of July 3, 2012, $137,741, or 51% of federal project funds, had been expended.
   b. Requests for a 1-year no cost extension, minor budget amendment, and minor work plan amendment were submitted this quarter.

51% Complete

Subtask 1.3: TWRI will participate in meetings with TSSWCB and project partners as appropriate in order to efficiently and effectively achieve project goals, coordinate monitoring efforts and summarize activities and achievements made throughout the course of this project.

The following actions have been completed during this reporting period:
a. A coordination meeting was held on April 9, 2012 between TWRI, AgriLife Extension, USDA-ARS, and TSSWCB to discuss and make plans for the field demonstration.
b. Coordination meetings were held on April 30 and May 3, 2012 to coordinate litter application in May 2012 at Riesel and coinciding monitoring activities.

70% Complete

Subtask 1.4: TWRI will work with the POSC, USDA-ARS, and SAML to ensure appropriate communication with the poultry industry.

The following actions have been completed during this reporting period:
a. POSC continues to communicate with Sanderson Farms and other poultry integrators to ensure their awareness and support of the project activities.

70% Complete

Subtask 1.5: TWRI will organize semi-annual TTVN meetings with project participants to discuss project activities, project schedule, lines of responsibility, communication needs, and other requirements.

The following actions have been completed during this reporting period:
a. Several project meetings were held with TSSWCB and project partners this quarter as discussed subtask 1.3 above.

70% Complete

TASK 2: Quality Assurance

Subtask 2.1: TWRI will develop a QAPP for activities in Task 3 and 4 consistent with the most recent versions of EPA Requirements for Quality Assurance Project Plans (QA/R-5) and the TSSWCB Environmental Data Quality Management Plan.

100% Complete

Subtask 2.2: TWRI will submit revisions and necessary amendments to the QAPP as needed.

The following actions have been completed during this reporting period:
a. Additional minor revisions were made to the QAPP this quarter and submitted to TSSWCB for transmission to the EPA for approval.

70% Complete

TASK 3: Demonstration of IWC of Poultry Litter

Subtask 3.1: POSC will work with integrators (primarily Sanderson Farms) in Limestone and Falls Counties to identify a cooperator (poultry grower) for conducting the IWC demonstration. The cooperator demonstration site will provide the poultry house where IWC will be performed and the IWC and raw litter for land application.
The following actions have been completed during this reporting period:

a. POSC worked with Sanderson Farms to secure cooperators (poultry growers) in Limestone County for conducting the IWC demonstration.

100% Complete

Subtask 3.2: IWC will be conducted by POSC at the cooperator site identified in Subtask 3.1 in years 1 & 2 to demonstrate and evaluate IWC utility prior to litter removal from poultry houses.

The following actions have been completed during this reporting period:

a. IWC was conducted at the cooperator site September 24 – October 3, 2011 before being delivered to Riesel sites for application.
b. IWC was conducted at the cooperator site May 3-11, 2012 before being delivered to Riesel sites for application.

100% Complete

Subtask 3.3: Raw and IWC poultry litter samples will be collected by POSC prior to land application to evaluate the effect of composting on levels of bacteria, nutrients, and volatiles in the litter. Bacteria levels (E. coli) in the litter will be analyzed by SAML. Nutrient levels (N-P-K) in the litter will be analyzed by SWFTL. Volatiles emitted from the litter prior to land application will be analyzed by W-TAMU.

The following actions have been completed during this reporting period:

a. Raw and IWC poultry litter samples were collected by POSC on October 3, 2011 and May 14, 2012, prior to land application, and analyzed by SAML, SWFTL, and W-TAMU for bacteria, nutrients, and volatiles to evaluate the effect of composting on their levels in the litter.

100% Complete

Subtask 3.4: Raw and IWC poultry litter will be applied by POSC at 3 tons/ac to the USDA-ARS Riesel site. Annual soil tests will be performed by SWFTL and by USDA-ARS.

The following actions have been completed during this reporting period:

a. Litter was applied on October 4, 2011 and May 14, 2012.
b. Soil samples were collected on October 3, 2011 and May 13, 2012 prior to litter application. All soil test analysis has been completed except for organic carbon and total nitrogen.

95% Complete

Subtask 3.5: POSC will assess the cost of implementing IWC on poultry operations for inclusion with educational materials as compared to conventional methods.

The following actions have been completed during this reporting period:

a. No activity to report this quarter.

0% Complete
**TASK 4: Analysis of Environmental Effects of IWC**

Subtask 4.1: Runoff samples will be collected from two pastures at the USDA-ARS Riesel site for about one year prior to litter application and for about two years following litter application to evaluate the impacts of using IWC poultry litter versus raw poultry litter. Runoff samples will be collected from all other field- and watershed-scale sites at Riesel to quantify nutrient and bacteria from background sites and litter application sites. E. coli levels in water samples will be evaluated by SAML. Nutrient analysis (NO\textsubscript{3}-N, NH\textsubscript{4}-N, and PO\textsubscript{4}-P) for water samples will be conducted by the USDA-ARS with funding from another project.

The following actions have been completed during this reporting period:

a. Runoff sampling events occurred at one site on June 6, 2012.

70% Complete

Subtask 4.2: Runoff samples will also be collected from four 0.25 acre field sites at the USDA-ARS Riesel site for about 1 year prior to litter application and for about 2 years following litter application to compare the impacts of using IWC and raw poultry litter on bacteria and nutrient runoff. Two of the field sites will receive raw litter and two will receive IWC litter. Rainfall amounts, runoff, and quantities of E. coli and nutrients will be evaluated. E. coli levels in water samples will be evaluated by SAML. Nutrient analysis (NO\textsubscript{3}-N, NH\textsubscript{4}-N, and PO\textsubscript{4}-P) for water samples will be conducted by the USDA-ARS with funding from another project.

The following actions have been completed during this reporting period:

a. No runoff sampling events occurred on the 0.25 ac sites this quarter.

80% Complete

Subtask 4.3: POSC and W-TAMU will also evaluate other potential environmental benefits of using IWC poultry litter instead of raw litter. Through the use of field assessment of volatile levels at the litter application sites at Riesel by POSC and W-TAMU, the environmental impacts of using IWC poultry litter instead of raw litter will be demonstrated/evaluated.

The following actions have been completed during this reporting period:

a. Field assessment of volatile levels at the litter application sites at Riesel were conducted on October 5, 7, and 10, 2011 and again on May 15, 16, and 18, 2012 following the scheduled litter applications.

100% Complete

**TASK 5: Technology Transfer**

Subtask 5.1: POSC, SAML, and USDA-ARS, with assistance from TWRI and project participants, will develop outreach materials (1 refereed journal article and 1 Extension fact sheet) summarizing the results of the demonstration and the analysis of the environmental impacts of IWC poultry litter. The Extension Fact Sheet will be submitted to the TSSWCB and poultry integrators for review prior to publication.

The following actions have been completed during this reporting period:

a. No activity to report this quarter. Once data analysis from the May 2012 in-house
windrow composting and litter application is complete, POSC will initiate development of the Extension fact sheet.

**25% Complete**

Subtask 5.2: POSC will conduct 6-9 grower meetings throughout the poultry producing areas of the state to present results of the IWC demonstration/evaluation. POSC will work with poultry integrators to deliver 2-3 programs for growers for each integrator (Sanderson Farms, Tyson, Pilgrim’s Pride). At least 1 field day will be held in conjunction with the grower meetings to view the IWC at Riesel field sites. TWRI will assist POSC by developing press releases, meeting notification materials for distribution prior to the meetings, and post meeting summaries.

The following actions have been completed during this reporting period:
   a. No activity to report this quarter. This activity will be initiated once sufficient data has been collected for presentation. Once analysis of data from the May 2012 in-house windrow composting and litter application is completed, POSC can combine the assessment of volatile levels from the 2 applications and the effect of composting on levels of bacteria, nutrients, and volatiles in the litter to provide sufficient information to initiate data presentation to growers.
   b. A field day is planned for July/August 2013 at the IWC at Riesel field sites.

**5% Complete**

Subtask 5.3: TWRI, with assistance from POSC, USDA-ARS, and SAML, will develop (Month 1-6), host and maintain (Months 6-36) a project website for dissemination of project materials.

The following actions have been completed during this reporting period:
   a. The Environmental Effects of In-House Windrow Composting of Poultry Litter website went online in February 2010. It can be found at http://windrowlitter.tamu.edu/. Since the website went online, it has been viewed by a grand total of 410 unique visitors.
   b. This quarter, the website was viewed by 58 unique visitors.

**70% Complete**

Subtask 5.4: POSC, with assistance from TSSWCB, TWRI and USDA-ARS, will work with USDA-NRCS to make necessary revisions to various practice standards (i.e., 629 Waste Treatment, 633 Waste Utilization, 317 Composting Facility) to include IWC.

The following actions have been completed during this reporting period:
   a. Conservation Practice Job Sheet No. 629, In-House Pasteurization of Litter Waste Treatment was released November 2009.

**100% Complete**

Subtask 5.5: POSC will work with SAML, USDA-ARS, and TWRI to develop a final report summarizing the results of the project.

The following actions have been completed during this reporting period:
   a. No activity to report this quarter.

**0% Complete**
III. Related Issues/Current Problems and Favorable or Unusual Developments
   • Due to drought, a no cost extension was requested to gather sufficient data to meet the objectives of the project.

IV. Projected Work for Next Quarter
   • Complete analysis of volatiles
   • Complete analysis of nutrients and bacteria in litter and soils
   • Continue monitoring runoff
   • Begin incorporating results to date into fact sheet and presentation