



FPPC

Farm Pilot Project Coordination, Inc.
"Technologies for Nutrient Management"

TO: Mr. William Boyd - Leader, Manure Management Team, ENTSC - NRCS

FROM: Bob Monley, General Manager, FPPC
Aimee Walker Thomas, FPPC Administrative Program Manager

DATE: January 3, 2012

COPY: Elvis Graves, NRCS, Acting Director, ENTSC
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Preston Burnette, FPPC Research Engineer
Jane Corson-Lassiter, FPPC Chesapeake Regional Director
Fernando Faria, FPPC President & COO
Aimee Walker Thomas, FPPC Program Manager

RE: 4th Quarter Report for October 1, 2011 to December 31, 2011

This report is intended to update the NRCS and the FPPC Board of Directors on the status of the innovative technology pilot projects.

Executive Summary

Farm Pilot's Manure-to-Energy project at the Marc Marsh farm in Cheraw, SC met an important milestone this quarter when the electrical generating capability was grid connected. The previous week Farm Pilot attended a public hearing in Chesterfield County to provide more information about the on-farm use of energy from animal waste.

Farm Pilot attended a formal ceremony in Washington, DC on October 5, 2011 to mark the awarding of significant grants by National Fish and Wildlife Foundation (in excess of \$10M) for restoring the Chesapeake Bay watershed. As a recipient of various grants, Farm Pilot collaborated with other stakeholders and was party to four grants provided.

Outreach this quarter involved exhibiting at Florida's Energy Summit and sharing the innovative nutrient management ideas planned for the Chesapeake Bay watershed led by FPPC. Farm Pilot presented its view of developing effluent treatment that should be considered to

complement anaerobic digestion process at the virtual field day in a webinar organized by the Farm Foundation.

Our 2010 Cooperative Agreement was amended to provide additional funds and scope to pursue new nutrient management methods for land application.

OPERATIONS -----

Grant Announcements

Farm Pilot acknowledges the generous support provided by National Fish and Wildlife Foundation, the Bay Funders Group and other collaborators who were teamed as grant partners in applying innovative nutrient management methods in the Chesapeake Bay watershed. Award highlights include:

1. Multiple manure to energy on farm projects - \$650K and subcontract for \$691K
2. Keith Campbell Foundation \$150K.
3. Subcontract award for nutrient removal at small dairies - Virginia Tech for \$63K.
4. Eastern Shore - RC&D award was valued at \$462K.

Outreach Activity

FPPC played a leadership role in the following events:

- Exhibitor at Florida's Energy Summit sponsored by the Department of Agriculture. Adam Putnam, Florida's Secretary of Agriculture, organized this year's event to reflect his new charter for developing and managing effective energy policy for the state.
- A virtual Renewable Energy Education Field Day and webinar based seminar hosted by the Farm Foundation on October 26, 2011.
- Presentation of Manure-to-Energy initiative and the effluent treatment promoted by FPPC at the 2011 NFWF Agriculture Networking Forum at the Hershey Lodge in Hershey, PA held November 14 through 16, 2011.
- Poster presentation on October 6, 2011 at the South Carolina BioEnergy Summit hosted by Clemson University.

Staffing Changes

Fernando Faria has joined the Salem Enterprise Solutions team and will function as President and COO providing direction for FPPC, Vastec, Thermal Matrix and Enable America.

After 5 years of service, FPPC Field site manager, Dudley Voorhees, has opted to leave FPPC for another position. Jane Corson Lassiter, who previously held a key position as NRCS - RC&D Coordinator in Accomac, VA has accepted a position with FPPC as the Regional Director for the Chesapeake Bay. This placement was made possible under the terms of a two year IPA agreement negotiated between NRCS and FPPC. The assignment brings mutual benefits for NRCS and FPPC while focusing on the challenges and more effective coordination of nutrient management efforts in the Chesapeake Bay watershed.

Finally, Chemical and Environmental Engineer, Nidal Samad, tendered his resignation after accepting another job in Saudia Arabia. FPPC has begun interviewing for a senior engineer to replace him.

Progress at active pilot demonstration sites is summarized below.

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Emissions and Nitrogen Capture (#6.08)-----

Project purpose:

The objectives of this project include:

- Identify the benefits of land application of Bio-char and its effect on crops and soil health (carbon sequestration, water retention, etc.);
- The application of Nitrapyrin to help stabilize nitrogen when poultry litter is applied and its ability to slow migration; and
- The characterization of ammonia adsorption using Bio-char as an activated or non-activated sorption media and evaluation of its utility in swine and poultry house

Project Status:

Biochar characterization is nearing completion by Dr. Reddy at North Carolina – A&T. With knowledge of how sorption rates can be influenced, we are positioned to process the poultry litter in an optimum way.

Thermal Energy from Poultry Litter (#6.12) -----
Marc Marsh Farms, Cheraw, South Carolina

Project purpose:

To harness the energy value of poultry litter utilizing gasification and poultry litter as a fuel. Electricity will be produced to offset ventilation/cooling costs for the farm.

Project status:

With problems surfacing at the heat exchanger and with particulate collecting at the heat exchanger surfaces, FPPC invited NC State University to help model the BGP gasifier to learn more about performance characteristics. The gasification/heat exchanger system continues to operate intermittently with various startup hurdles. Testing and data collected is constrained by the system operating continuously. Major issues this quarter involved operating the heat exchanger and the interaction of the draft needed by the gasifier.

Final connection to the electric utility's grid has been completed. This is a key milestone.

Thermal Energy and Ash By-Product (#6.09) -----
Old Mills Farm, Virginia

Project purpose: Phase I -To derive energy and nutrient benefits by gasifying poultry litter and converting the Phosphorous rich ash into a manageable by-product that can be utilized as a pathogen free fertilizer for the nearby tomato and vegetable crop. The intent is to reduce the typical poultry litter land application in Delmarva by converting the gasified phosphorous rich ash to a viable, pathogen free fertilizer for the nearby vegetable crop. Phase II harness the useful energy and generate electricity on-farm.

Project status:

This project has received partial funding but to continue the project scope will have to be revalidated.

Effluent Treatment Methods (#6.07A) -----
Multiple dairy sites, Florida

Project purpose:

Develop a graded approach for treating liquid waste utilizing a cost effective system composed of incremental solid separation steps. Multiple pieces of equipment will be linked and connected into an optimum system and will rely primarily on low cost mechanical solids separation methods. The contribution from each piece of equipment will be determined based on the amount of solids and nutrients removed from the liquid waste stream.

Project Status:

During continued testing at the dairy, the performance characteristics of the system and the repeatability of process have been observed. Immediate concerns point to a size effect that may influence the degree of mixing in the chemical separator. Another size unit will be pursued to eliminate the effects of flow rate and scale.

Documentation of the full system has been completed.

Attachment A

Final report status of thirty-six (36) completed pilot demonstration projects is listed below:

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- A. Swine, North Carolina -----**
Super Soil Systems, USA (#3.09)
Goshen Ridge Farms, LLC - in Clinton, NC
“Solids Removal System to Reduce Environmental Impact of Swine Production”
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- B. Swine, North Carolina -----**
Air Diffusion Systems (#3.02)
Cavanaugh Farm No. 1 - swine farm in Wallace, NC
“Advanced Microbial Treatment System (AMTS) at Cavanaugh Farm No. 1”
Report Status: The final report has been reviewed, issued and posted on the FPPC website
- C. Swine, Iowa -----**
Global Resource Recovery Organization (GRRO) (#3.05)
Burt Farm & Livestock Co. - swine farm in Marshalltown, IA
“Pork Nutrient Management Demonstration”
Report Status: The final report has been reviewed, issued and is posted on the FPPC website.
- D. Dairy, Florida -----**
Royal Consulting Services, Inc. (#3.08)
Posey Dairy in Lake Placid, FL
“Florida Dairy Nutrient Management Demonstration”
Report Status: The final report has been reviewed, issued and is posted on the FPPC website.
- E. Poultry, North Carolina -----**
McGill Environmental Systems (#3.06)
Farms in Sampson County, NC
“Nutrient Management Technology for Animal Feeding Operations”
Report Status: The final report has been reviewed, issued and is posted on the FPPC website.
- F. Poultry, North Carolina -----**
Cape Fear Resource Conservation (#3.03)
Central Processing Facility in Duplin County
“Demonstration Optimum Fertilizer of Ash from the BEST Solution for Swine and Poultry Manure Management”
Report Status: The final report has been reviewed, issued and posted on the FPPC website.

- G. Poultry, North Carolina -----**
Mountain Organic Materials (MOM) (#3.10)
Randy Johnson and David Parsons Farms, Wilkesboro, NC
“Demonstration of Poultry Manure and Mortality Forced Aeration Composting Bin Systems”
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- H. Poultry, Alabama-----**
Renewable Oil, Inc. (ROI) (#3.07)
Mills Poultry Farm in Russellville, AL
“Demonstrating BioOil Technology for Poultry Litter Nutrient Management”
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- I. Poultry, Texas -----**
RMG Strategies, Ltd and Microorganics (#3.11)
Jacobs Ranch in Carmine, TX
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- J. Dairy, Florida -----**
AJT/Agrimond (#3.01)
Watson Dairy in Trenton, FL
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- K. Dairy, Wisconsin -----**
Skill Associates – Phase I & II(#5.08)
Weise Farms in Greenleaf, WI
Report Status: The final report has been reviewed, issued and posted on the FPPC website
- L. Dairy, Florida-----**
Royal Consulting, Inc. (#4.01)
Butler Oaks in Lorida, Florida
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- M. Dairy, Florida -----**
QED Occtech (#4.02)
Branford–DPS Dairy in High Springs, Florida
Report Status: The final report is currently under review to be re-posted on the FPPC website.
- N. Dairy, Florida-----**
Chemical Lime Co. (#3.04)
Aprile Dairy in Riverview, Florida
Report Status: The final report has been reviewed, issued and posted on the FPPC website.

- O. Swine, Iowa-----**
Global Resource Recovery Organization, Inc. (#3.13)
Mobile Deployment System, Eldora, Iowa
Report Status: The final report has been reviewed, issued and posted on the FPPC website.
- P. Dairy, Colorado -----**
Applied Chemical Magnesias Corp. (ACM) (#3.12)
Bella Holsteins, Inc. in Platteville, Colorado
Report Status: The final report has been issued, reviewed, and posted on the FPPC website.
- Q. Dairy, Utah-----**
Utah State University (#5.4.04)
Blaine Wade Dairy near Ogden, Utah
Report Status: A final report has been issued, reviewed, and will be posted on the FPPC website.
- R. Dairy, Vermont-----**
AWS, LLC (#6.02)
North Williston Cattle Company (Whitcomb Farm)
Report Status: A final report has been issued, reviewed, and posted on the FPPC website.
- S. Dairy, New York-----**
AWS, LLC (#5.05)
Noblehurst Farms
Report Status: A final report has been issued, reviewed, and posted on the FPPC website.
- T. Dairy, Vermont -----**
BioProcess Technologies (#5.02)
North Williston Cattle Co.
Report Status: A final report has been issued, reviewed, and is posted on the FPPC website
- U. Swine, Illinois-----**
Enviowaste Technology, Inc. (#4.09)
Rensing Family Farms, Inc.
Report Status: A final report has been issued, reviewed, and posted on the FPPC website.
- V. Swine and Dairy, Michigan-----**
Phase 3 Developments & Investments, LLC (#6.06)
Geerlings Hillside Farm
Report Status: A final report has been issued, reviewed and posted on the FPPC website.

- W. Dairy/Mixed Waste, California-----**
Agricultural Waste Solutions, Inc. (#5.06)
Inland Empire Municipal Site, Chino
Report Status: A final report has been issued, reviewed and posted on the FPPC website.
- X. Swine, North Carolina-----**
Super Soil Systems USA (#4.05)
Goshen Ridge Farms in North Carolina
Report Status: A final report has been issued and is currently under review.
- Y. Dairy, Ohio-----**
Crossroads RC&D / Wastewater Services, Inc. (#4.07)
Andreas Farm, Royer Farm
Report Status: A final report has been issued, reviewed, and posted on the FPPC website.
- Z. Dairy, Virginia-----**
Virginia Dairymen's Association (#4.15)
D&D Dairy, Dayton, Virginia
Report Status: A final report has been issued, reviewed, and posted on the FPPC website.
- AA. Dairy, Pennsylvania-----**
Nutrient Control Systems, Integrity (#5.07)
Mercer Vu Farms in Mercersburg, Pennsylvania
Report Status: The final report has been reviewed, issued and is posted on the FPPC website.
- AB. Dairy, Texas -----**
Reaction Energy Corp. (#4.16)
Fisher Dairy, Yantis, Texas
Report Status: A final report has been issued, reviewed, and posted on the FPPC website.
- AC. Dairy, Florida -----**
Pretreatment Methods and Evaluation (#5.12)
Report Status: A final report has been drafted and is being reviewed.
- AD. Swine, Hawaii -----**
Limited Resource Farm – University of Hawaii (#6.13)
Janong Natural Farms, Kurtistown, Hawaii
Report Status: Final report is being reviewed for posting on FPPC website.
- AE. Poultry, Wisconsin -----**
R&J Partnershi[(#5.04)
Creekwood Farms, Lake Mills, WI
Report Status: Project report is being drafted.
- AF. Dairy, Florida -----**
White Technologies Inc – US Environmental Products Inc. (#5.09)

North Florida Holstein, Bell, FL
Report Status: Project report being drafted

AG. Dairy, Florida -----
FPPC Polymer Study (#5.09a)
North Florida Holstein, Bell, FL
Project Status: Project report is being written.

AH. Swine, Iowa -----
Puck Custom Enterprises (6.4.03)
Project Status: Awaiting report and review

AI. Swine, North Carolina (#6.4.14)
North Carolina A&T
University Farm, Greensboro, North Carolina
Report Status: A final report has been issued, reviewed, and to be posted on the FPPC website.

AJ. Dairy, Florida -----
FPPC Effluent Treatment Methods (#6.07)
M&B Dairy, Lecanto, FL
Project Status: Final report is being written