

**Curt A. Gooch, P.E.<sup>1</sup>**  
***Dairy Environmental Systems Engineer***  
Cornell PRO-DAIRY Program  
Biological & Environmental Engineering  
Cornell University  
Ithaca, NY 14853  
*cag26@cornell.edu*

## **2015 CURRICULUM VITAE**

### **Education**

M.S. Biological Resources Engineering	University of Maryland-College Park	1997
B.S. Agricultural Engineering	University of Maryland-College Park	1988
Graduate	Cornell Dairy Executive Program	2006

### **Professional Registrations**

<sup>1</sup>Registered Professional Engineer – State of Maryland No. 22020 1996 – 2014

### **Membership (Elected)**

Cornell Atkinson Center for a Sustainable Future – Faculty Fellow 2013 – Present

### **Current Employment**

*Senior Extension Associate* May 1998 – Present  
Biological and Environmental Engineering and Animal Science Departments  
PRO-DAIRY Program  
Cornell University, Ithaca, New York

- Conceived and continuously develop, direct and manage the Dairy Environmental Systems program under the Cornell PRO-DAIRY program umbrella.
- Conceive, initiate, develop, and manage/implement collaborative applied (field) research projects (both sponsored and internal funded) with objectives to further the understanding and foster the advancement of dairy housing and integrated waste handling and treatment/renewable energy/nutrient recovery systems.
- Direct, develop, and deliver extension/outreach programming for northeast dairy producers and agri-service professionals that focuses on dairy housing and waste management systems as they relate to animal performance and well-being, efficiency, environmental impact/compliance, and profitability. Current major programmatic focus: manure-to-energy and integrated waste treatment systems, dairy farmstead air emissions (greenhouse gases), climate change mitigation/adaptation, and pre-weaned, group-fed calf facilities.
- Perform technical/economic feasibility studies and conduct on-farm demonstrations and training for innovative manure handling/management/nutrient management systems.
- Provide US dairy industry leadership for emerging issues including agricultural air emissions, carbon footprint, sustainability, animal welfare, and OSHA compliance.
- Provide expertise to support programs and research projects performed by Cornell Cooperative Extension educators and agri-service professionals.
- Perform one-on-one farm consultations for dairy farmers and farm specific designs.
- Guest lecturer for Cornell College of Ag. & Life Sciences/Veterinary School classes.
- Head up annual continuing education training sessions for professional engineers.

Consulting Agricultural Engineer

August 1994 – Present

Highlighted efforts (project list available)

- Perform one-on-one consultations and develop designs/ site layouts for production dairies.
- Perform integrated manure management/renewable energy feasibility studies for dairy producers and communities.
- Expert witness.
- Provide technical expertise for design of animal research and research support facilities.
- Develop and deliver educational programs to dairy producers and their advisors and agri-service professionals in the U.S. and Europe.

**Relative Previous Employment**

Varsity Football Head Coach

2010

Lansing High School

Lansing, New York

Project Engineer

May 1989 – July 1998

Research Facilities Management Office

Maryland Agricultural Experiment Station

College Park, Maryland

- Project management from conception to completion of capital construction, renovation, and maintenance and repair projects that ultimately provided specialized agricultural research, research support, and general farmstead facilities. Tasks routinely performed included: project planning, scope, cost and schedule determination, budget tracking, engineering design according to applicable codes and client/user needs, permitting, development of bid packages, conduct pre-bid meetings, evaluate bid results, conduct work initiation conferences, perform engineering design reviews, oversee and inspect construction, and authorize payments. Highlighted capital construction projects include green site swine, dairy, and beef research and research support/production facilities.
- Provided technical expertise and assistance to support agricultural research.
- Provided employee management for construction projects performed by facility personnel.
- Representative to the Maryland Energy Administration.
- Performed set-up tasks and managed operational shifts for the first robotic milking system installed in the US.

Interim Engineering and Construction Office Manager

May – August 1993

Research Facilities Management Office

Maryland Agricultural Experiment Station, College Park, Maryland

- Supervise Project Engineers and associated staff personnel
- Project manager for all construction and maintenance and repair projects

Dairy Farm Employee (Full time and part-time)

May 1987 – March 1992

Rolling Acres Farm, New Windsor, Maryland

- Worked with the Natural Resource Conservation Service to design and construct two 400,000 gallon cast-in-place concrete liquid manure storage structures.
- Operated and maintained heavy farm equipment to accomplish all aspects of field work.
- Performed milking operations and herd health tasks.

### **Current Program Overview**

The PRO-DAIRY Dairy Environmental Systems program, works closely with members of our multidisciplinary team along with select New York State and U.S. dairy industry leaders to identify, develop, document, and introduce and disseminate innovative methods in dairy housing and waste management systems targeted to enhance animal performance, animal well-being, system efficiency, environmental compliance, and overall farm profitability. These efforts are accomplished with the overall vision of furthering individual farm and industry-wide growth and sustainability.

Program efforts are accomplished by conducting industry-applied research with the objective of furthering the understanding and development of dairy housing and waste management systems (with current focus on anaerobic digestion) and by monitoring relative research and extension work performed by nation-wide counterparts. Findings are disseminated by conducting on-farm training and demonstrations of new technologies and by developing and delivering written, oral, and web-based materials. Additionally, expertise is provided through educational programs offered by county and regional Cornell Cooperative Extension employees and agri-service and agri-business entities.

Overall, program initiatives have resulted in dairy producers and their advisors being better positioned to make informed business decisions in the areas of cow comfort/well-being, renewable energy, waste (nutrient) management/treatment, air emissions, and farm safety. Impact indicators are testimonials from dairy producers and their advisors and observed changes in business behavior.

### **PROFESSIONAL AWARDS**

2004 - American Society of Agricultural Engineers (ASAE) Educational Aids Blue Ribbon Award for: “Building Freestall Barns and Milking Centers: Methods and Materials”

2006 - American Society of Agricultural and Biological Engineers (ASABE) Superior Paper Award for: “Heat Transfer Model for Plug-Flow Anaerobic Digesters”

2009 - Cornell University College of Agriculture and Life Sciences’ Research and Extension Award for Outstanding Accomplishments in Extension/Outreach

### **PROGRAM WEB SITES DEVELOPED AND MAINTAINED**

[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

[www. prodairy.cals.cornell.edu/facilities-engineering](http://www.pro dairy.cals.cornell.edu/facilities-engineering)

### **EMPLOYEES SUPERVISED - CURRENT**

Mrs. Jennifer Pronto, Research Associate II

Dr. Timothy Shelford, Research Associate

Mr. Joseph G. Usack, Post-Doc

Dr. Jason Oliver, Post-Doc

## APPLIED RESEARCH/EXTENSION PROJECTS – ACTIVE SPONSORED PROJECTS

---

Powell, M.J., F.L. Pierce, F. J., M.M. Jahn, **C. A. Gooch**, J.S. Cooper, L.E. Chase, E.F. Wheeler, D.J. Reinemann, O. Jolliet, M.A. Wattaux, P. Nowak, R. Larson, C.E. Forest, J.L. Hatfield, P.A. Vadas, G. Thoma, T.L. Richard, M.D. Matolck, Q.M. Ketterings, C. Izaurralde, W.K. Coblenz, D.B. Beegle, H.D. Karsten, W.E. Jokela, C.J. Dell, W. Bland, C.H. Benson, Y. Wang, M.W. Stephenson, and S. Liu

*Climate Change Mitigation and Adaptation in Dairy Production Systems of the Great Lakes Region*

05/2013 - 04/2018

USDA NIFA - AFRI

\$814,825 (Cornell's Component)

---

Stowell, R., J. Harrison, S. Mukhtar, **C. A. Gooch**, and L. Jacobson

*National Facilitation of Extension Programming in Climate Change Mitigation and Adaptation for Animal Agriculture*

02/2011 - 01/2016

USDA NIFA AFRI

\$726,902 (Cornell's Component)

---

Angenent, L., K. K. Gebremedhin, and **C. A. Gooch**

*Comprehensive Investigation into the Use of On-Farm Generated Renewable Combined Heat and Power (CHP) Energy to Mitigate the Effects of Environmental Stress on Dairy Cows in New York State*

09/2012 - 12/2015

New York State Energy Research Development Authority

\$300,000

---

Lansing, S. and **C. A. Gooch**

*Quantifying and Demonstrating Scrubbing H<sub>2</sub>S from Farm-Based Anaerobic Digestion Systems*

1/9/2015 – 8/31/2017

Northeast SARE

\$220,487

---

**APPLIED RESEARCH PROJECTS – PENDING SPONSORED PROJECTS**

---

**C. A. Gooch**

*Microbiologically-Activated Biochar A Likely Game Changer for Anaerobic Digestion*  
New York State Energy Research and Development Authority  
\$296,459

---

**C. A. Gooch**

*New York State Manure-Based Anaerobic Digestion Assistance Implementation*  
New York State Energy Research and Development Authority  
\$127,980+

---

**C. A. Gooch**

*PRO-DAIRY Increases Agricultural Engineering Capacity for BMP Implementation*  
Lake Champlain Basin Program  
\$48,356

---

**C. A. Gooch**

*Evaluating Different Manure Management Practices in Controlling Spread of Antimicrobial Resistance from Dairy Farms*  
Subcontractor to University of Buffalo; USDA-NIFA  
\$260,789

---

## APPLIED RESEARCH/EXTENSION PROJECTS – COMPLETED

**Sponsor:** Federal Formula Funds – Hatch

**Title:** *Coupling Dairy Manure Anaerobic Digesters with Commercial Greenhouses – Assessment of Technical and Economic Feasibility*

**Initiation-Completion Dates:** 10/2012 to 9/31/2015

**Value:** \$90,000

**Role:** Principle Investigator

**Overview:** The technical and economic synergistic relationships were investigated by this project. Instrumentation was installed on multiple on-farm anaerobic digester systems and commercial greenhouses to measure and record energy/heat generated/demands of the anaerobic digesters and energy/heat demands of commercial greenhouses over multiple year periods. This data, along with other available was used in part to develop software packages that can be used to look at each system independently and in a synergistic ways. Future work has been proposed that includes integrating economic and greenhouse gas footprint modules into the existing software packages.

**Deliverables:** Final report and Anaerobic Digester/Commercial Greenhouse Synergistic Tool (web posted)

**Sponsor:** New York State Energy Research Development Authority (Agreement No. 15609)

**Title:** *Anaerobic Digestion Technology Training Programs*

**Initiation-Completion Dates:** 8/2009 to 12/31/2014

**Value:** \$465,000

**Role:** Principle Investigator

**Overview:** The Anaerobic Digester Workforce Development Project aimed at developing and delivering high quality educational programs targeted to a range of workforces within the dairy farm-based anaerobic digestion sector of the clean energy field. Included in the project plans, are five technical short-courses that will provide educational training to persons who are involved in the planning and implementation of dairy farm-based anaerobic digestion systems and to those currently or who will soon be managing existing operating systems.

**Deliverables:** Final Report and extension/outreach materials generated from the project

**Contact:** Vicki Colello, NYSERDA Project Manager, (518) 862-1090 Ext 3273

**Sponsors:** USDA (Contribution Agreement No. 68-2C31-0-157) & NYSERDA (Project No. 20722)

**Title:** *Dairy Power Coordinator Project*

**Initiation-Completion Dates:** 10/1/2010 to 9/31/2012

**Value:** \$120,000 total

**Role:** Principal Investigator

**Overview:** This project was to support the development of anaerobic digestion in New York State as a follow-up to the Innovation Center for US Dairy's Dairy Power Summit held in Syracuse, NY in October 2009.

**Highlighted Deliverables:** 1) White paper on the challenges and opportunities for small farm anaerobic digesters, 2) "Got Manure?" national conference on integrated manure treatment systems with a focus on anaerobic digestion, 3) Got Manure? Pre-conference NYS tour of on-farm integrated manure management systems, and 4) USDA-NRCS Agricultural Air Quality Task Force Annual Meeting (2012) pre-meeting tour.

**Contacts:** Peter Wright, USDA-NRCS Project Manager, Peter.Wright@ny.usda.gov, (315) 477-6538 and Tom Fiesinger, NYSERDA Project Manager, twf@nyserda.org, (518) 862-1090 Ext 3218

**Sponsor:** Elanco Animal Health (Study No. T1FUS100017)

**Title:** *The Effect of Rumensin® on the Stability of Manure-Based Anaerobic Digesters*

**Initiation-Completion Dates:** 12/2010 to 06/2012

**Value:** \$115,000

**Role:** Co-Principal Investigator

**Overview:** This project, funded by Elanco Animal Health, aimed to investigate the effect of Rumensin®, a dairy cattle feed additive (antibiotic), on the performance of cow manure-based anaerobic digesters. Laboratory-scale (4.5 L) anaerobic digesters were fed manure from cows dosed with increased levels of Rumensin®. Relevant measurements, such as biogas production and composition, were taken to assess the effect of the antibiotic on the digester system. Project findings are used by Elanco and PRO-DAIRY to advise farmers on how to introduce Rumensin® to their dairy herd in a manner that minimizes or eliminates upsetting manure-based anaerobic digester systems.

**Deliverables:** Final report to Elanco

**Contact:** Dr. Gerald D. Mechor, Elanco Animal Health Technical Consultant, mechor\_gerald\_d@elanco.com

**Sponsor:** New York State Energy Research Development Authority (Agreement No. 6597)

**Title:** *Biogas Distributed Generation Systems Evaluation and Technology Transfer*

**Initiation-Completion Dates:** 4/1/2001 to 06/30/2010

**Value:** \$537,222

**Role:** Collaborator then Principle Investigator

**Overview:** Conceived, developed, and implemented a methodology to evaluate the performance of five on-farm, manure-based anaerobic digester systems in New York State for Phase I of the project. Subsequently, four of the same digesters and one new digester system were monitored for one year following the then newly released Association of State Energy Research and Technology Transfer Institutions (ASERTTI) performance evaluation protocol. At each farm, the performance evaluation of the anaerobic digester system included three main areas: 1) the conversion of biomass to biogas, 2) the conversion of biogas to useful energy, and 3) system economics.

**Deliverables:** Final reports and extension/outreach materials generated in part from the project.

**Contact:** Tom Fiesinger, NYSERDA Project Manager, (518) 862-1090 Ext 3218

**Sponsor:** Cornell Cooperative Extension of Lewis County (Agreement No. 58528)

**Title:** *Feasibility Study of Anaerobic Digestion and Biogas Utilization Options for Lewis County Community Digester Project*

**Initiation-Completion Dates:** 4/22/2009 to 6/30/2010

**Value:** \$40,000

**Role:** Principle Investigator

**Overview:** A feasibility study was conducted through funding provided by New York State Senator Joseph Griffo of the 47<sup>th</sup> District in New York State to assess the multiple biomass-related components including: resource assessments, sampling and laboratory analyses

(biochemical methane potential and nutrient concentration investigation), methane production estimations and trucking analyses. The scope of work also included biogas to energy conversion quantifications, digester site option investigations, and economic profitability analyses.

**Deliverables:** Final report and extension/outreach materials generated in part from the project.

**Contact:** Michele Ledoux, Executive Director, (315) 771-3798

**Sponsor:** Dairy Management Incorporated (via Purdue University)

**Title:** *National Air Emissions Monitoring Study – Northeast Dairy Component and Greenhouse Gas Emissions Assessment*

**Initiation-Completion Dates:** 4/1/2007 to 5/1/2010

**Value:** \$286,805 (Cornell Component only)

**Role:** Principle Investigator

**Overview:** The National Air Emissions Monitoring Study was conducted to meet a key requirement of the US EPA Air Emissions Compliance Agreement and Final Order. Commercial livestock operations across the country were monitored for two years for the regulated emissions of ammonia, hydrogen sulfide, volatile organic compounds, and particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Five dairy sites were monitored include a dairy farm in Central New York State; this farm was also monitored for greenhouse emissions for the last six months of the project.

**Deliverables:** Collected raw data to Purdue University/Final data set to US EPA

**Contact:** Dr. Albert Heber, Professor, Purdue University (765) 494-1214

**Sponsor:** New York State Energy Research Development Authority (Agreement No. 7536)

**Title:** *Transferring Technology from NYSERDA Agricultural Innovation Manure Projects*

**Initiation-Completion Dates:** 1/1/2003 to 3/31/2010

**Value:** \$514,072

**Role:** Collaborator then Principle Investigator

**Overview:** NYSERDA commissioned several waste-to-energy projects in New York State and this project was to analyze and report on the data collected from these projects by Cornell and others, and develop and deliver extension/outreach materials to farmers and their advisors.

**Deliverables:** Develop and deliver extension/outreach materials and web site

**Contact:** Tom Fiesinger, NYSERDA Project Manager, (518) 862-1090 Ext 3218

**Sponsor:** New York State Energy Research Development Authority (Agreement No. 9446)

**Title:** *Task 2: Evaluation of Anaerobic Digesters Located at Emerling Farm and Sunny Knoll Farm Following the ASERTTI Protocol*

**Initiation-Completion Dates:** 3/1/2007 to 6/30/2011

**Value:** \$114,559

**Role:** Principle Investigator

**Overview:** Two New York State on-farm dairy manure-based anaerobic digester systems were monitored for one year following the Association of State Energy Research and Technology Transfer Institutions (ASERTTI) performance evaluation protocol. At each farm, the performance evaluation of the anaerobic digester system included three main areas: 1) the conversion of biomass to biogas, 2) the conversion of biogas to useful energy, and 3) system economics.

**Deliverables:** Final Report and extension/outreach materials generated in part from the project



**Contact:** Tom Fiesinger, NYSERDA Project Manager, (518) 862-1090 Ext 3218

**Sponsor:** New York State Energy Research Development Authority (Agreement No. 7248)

**Title:** *Feasibility of Anaerobic Digestion of Sand-Laden Dairy Manure*

**Initiation-Completion Dates:** 12/23/2005 to 3/1/2007

**Value:** \$54,001

**Role:** Principle Investigator

**Overview:** Sand is widely used for bedding dairy free stalls due to its superior ability to provide a comfortable surface for cows to lie on and also due to its non-organic composition. Anaerobic digestion is a prudent method to treat manure providing requisite odor control for many dairy farms that have long-term manure storages. However, the co-existence of sand bedding and anaerobic digestion on the same farm is not been possible due to challenges in handling sand-laden dairy manure. This project looked at the possibility of separating bedding sand pre- and post-digestion.

**Deliverables:** Final Report and extension/outreach materials generated in part from the project

**Contact:** Tom Fiesinger, NYSERDA Project Manager, (518) 862-1090 Ext 3218

**Sponsor:** New York State Energy Research Development Authority (Agreement No. 6249C)

**Title:** *Treating and Handling Manure on Dairy Farms to Protect the Environment*

**Initiation-Completion Dates:** 4/1/2000 to 7/30/2004

**Value:** \$93,875

**Role:** Collaborator

**Overview:** This project consisted of developing a conceptual design, designing, constructing, and operating two innovative dairy manure treatment systems, one a bio drying system and the second a fixed-film anaerobic digester system. Subsequent to project commissioning, each was extensively evaluated to determine the efficacy of treatment manure and also for their economics.

**Deliverables:** Final Report and extension/outreach materials generated in part from the project

**Contact:** Tom Fiesinger, NYSERDA Project Manager, (518) 862-1090 Ext 3218

## OTHER PROFESSIONAL ACTIVITIES – CORNELL UNIVERSITY

**Departments (Biological and Environmental Engineering, Animal Science, Veterinary Medicine):**

- Guest Lecturer for undergraduate and graduate classes
- Teaching and Research Center – Dairy Facilities Replacement Committee

**College of Agriculture and Life Sciences:**

- Dairy Program Work Team
- Whey Work Group
- Cornell University Renewable Bioenergy Initiative Feasibility Study
- Cornell University Ruminant Center Anaerobic Digester Project

## **OTHER PROFESSIONAL ACTIVITIES – STATE/NATIONAL/SOCIETY**

### **New York State**

- Northeast Dairy Producers Association – Water Quality and Quantity Workgroup
- New York State Dairy OSHA Workgroup

### **National Milk Producers Federation**

- Environmental/Sustainability Task Force, Formally the Northeast Science Representative

### **Dairy Management Incorporated**

- Dairy Sustainability Finance Development Task Force (currently inactive)

### **American Society of Agricultural and Biological Engineers (22-yr member)**

- ASABE SE 403, Dairy Housing Committee, Past-Chairman
- ASABE SE 40, Past-Chairman

### **Professional Societies/Organizations**

- Alpha Epsilon (18 yrs.)
- Dairy Practice Council (16 yrs.)
- National Frame Builders Association (10+ yrs.)
- Northeast Dairy Producers Association (13 yrs.)

### **Resource for Media (i.e., called upon as an expert for electronic or print media)**

- Dairy Herd Management Magazine
- American Agriculturalist
- Dairy Today
- Hoard's Dairyman Magazine
- DairyBusiness East Magazine
- Bio Cycle Magazine

### **Spreadsheet Tools Developed (for distribution only listed)**

- PRO-DAIRY Dairy Water Use Calculator
- PRO-DAIRY Tube Fan Design Tool
- PRO-DAIRY Tunnel Ventilation Calculator
- PRO-DAIRY Dairy Facility Construction Cost Estimation Tool

## **CONFERENCES/WORKSHOPS/SHORT COURSES ORGANIZED**

- 2016 – Northeast Dairy Producers Association – Biannual conference – planning committee member
- 2015 – PRO-DAIRY Fall 2015 Professional Engineers’ Workshop
- 2015 – PRO-DAIRY Spring 2015 Professional Engineers’ Workshop
- 2015 – Dairy Practice Council – Task Force I Spring Workshop
- 2015 – PRO-DAIRY Winter 2015 Professional Engineers’ Workshop
- 2014 – PRO-DAIRY Pre-Empire Farm Days Dairy Tour
- 2014 – PRO-DAIRY Spring 2014 Professional Engineers’ Workshop
- 2013 – PRO-DAIRY Fall 2013 Professional Engineers’ Workshop
- 2013 – PRO-DAIRY Impacts of Climate Change Predictions on NY Dairy Industry
- 2013 – NY/VT Anaerobic Digester Meeting
- 2013 – PRO-DAIRY/WNY-Dairy/Livestock/Field Crops Small Scale Anaerobic Digester Workshop
- 2013 – PRO-DAIRY 2013 Winter Dairy Management Series
- 2012 – PRO-DAIRY Fall 2012 Professional Engineers’ Workshop
- 2012 – USDA-NRCS Agricultural Air Quality Task Force annual meeting – Pre-conference Tour.
- 2012 – PRO-DAIRY Anaerobic Digester Workforce Development: Technical Feasibility Conference of on-farm Anaerobic Digestion, Anaerobic Digestion and Economic Assessment Model Guide, Technician’s Start-Up and Operation, and Biogas Clean-up and Utilization Systems Selection, Operation and Maintenance.
- 2012 – PRO-DAIRY - Got Manure? Enhancing Environmental and Economic Sustainability National Conference – Pre-conference Tour.
- 2012 – PRO-DAIRY/USEPA AgSTAR/USDA-NRCS/NYSERDA - Got Manure? Enhancing Environmental and Economic Sustainability National Conference
- 2011 – PRO-DAIRY Fall 2011 Professional Engineers’ Workshop

- 2011 – PRO-DAIRY Spring 2011 Professional Engineers’ Workshop
- 2010 – PRO-DAIRY Fall 2010 Professional Engineers’ Workshop
- 2010 – Northeast Dairy Producers Association Biannual Conference – Environmental Session
- 2010 – PRO-DAIRY Winter 2010 Professional Engineers’ Workshop
- 2009 – NEDPA Fall Manure Program
- 2009 – PRO-DAIRY Fall 2009 Manure Treatment Workshop
- 2009 – Dairy Industry Process-Based Model Workshop
- 2008 – PRO-DAIRY Fall 2008 Manure/Nutrient/Renewable Energy Workshop
- 2008 – PRO-DAIRY Spring 2008 Professional Engineers’ Workshop
- 2008 – PRO-DAIRY Spring 2008 Manure/Nutrient/Renewable Energy Workshop
- 2008 – NYSERDA’s 8<sup>th</sup> Annual Innovations in Agriculture Conference - Planning committee member
- 2008 – PRO-DAIRY Winter 2008 Dairy Modernization Program
- 2007 – PRO-DAIRY Fall 2007 Professional Engineers’ Workshop
- 2007 – PRO-DAIRY Post-Frame Building & Structural Roof Design Workshop for Engineers
- 2007 – PRO-DAIRY Agricultural Waste Treatment and Management Program
- 2006 – PRO-DAIRY Undersigned Manure Storage Evaluation Program
- 2006 – ASABE Annual Meeting; Technical Session Organizer
- 2006 – Northeast Dairy Producers Association Bi-Annual Conference – Planning Committee Member
- 2006 – Dairy Manure Treatment Discussion Group meeting
- 2005 – ASAE Annual Meeting; Technical Session Organizer and Moderator
- 2005 – Northeast Dairy Producers Association Annual Conference – Planning Committee Member
- 2005 – NYSERDA Anaerobic Digester Nitty Gritty Workshop

- 2005 – NRAES/NYSERDA Manure Management and Treatment Conference – Planning Committee Member
- 2005 – Maryland Dairy Industry Annual Meeting – Planning Committee Member
- 2005 – NRAES Dairy Calves and Heifers: Integrating Biology and Management – Planning Committee Member
- 2004 - Air Emissions and the EPA Consent Agreement National Discussion Conference Call No. 1. Call Organizer and Moderator.
- 2004 - Air Emissions and the EPA Consent Agreement National Discussion Conference Call No. 2. Call Organizer and Moderator.
- 2004 – NYSERDA/PRO-DAIRY/Cornell Manure Management Program – Manure Management Tour - Organizer
- 2004 – ASAE Annual Meeting; Technical Session Organizer and Moderator
- 2003 - Small Farm Modernization Conference Series
- 2003 – PRO-DAIRY/Miner Institute Dairy Facilities and Ag. Waste Conference Series
- 2003 – NRAES Building Freestall Barns and Milking Centers Conference – Conference Chair
- 2003 – ASAE Annual Meeting; Technical Session Organizer and Moderator
- 2003 – ASAE Dairy Housing V International Conference – Member of Program Committee and Member of Proceedings Committee
- 2002 – McLanahan Corporation’s Sand-Laden Dairy Manure Conference
- 2002 – ASAE Annual Meeting; Technical Session Organizer and Moderator
- 2002 – PRO-DAIRY Dairy Waste Treatment Systems Program and Tour
- 2002 – 2004 PRO-DAIRY Photoperiod Manipulation and Stray Voltage Series
- 2002 – NRAES Dairy Housing and Equipment Systems Conference – Conference Chair
- 2001 – NRAES Milking Systems and Parlors Conference – Member of Conference Planning Committee
- 1998 – PRO-DAIRY Ventilation Strategies Conference

## INVITED PRESENTATIONS

12/15/2015 Syracuse, NY. Western New York Dairy, Livestock and Field Crop Team of Cornell Cooperative Extension – Calf Congress. “Calf Housing Systems that Work: Options and Management”. 205 attended.

12/08/2015 Ithaca, NY. Controlled Environment Advisory Board. “Synergistic Energy Utilization: The Digester and the commercial greenhouse”. 26 attended.

09/24/2015 Syracuse, NY. New York State Association for Food Protection – 92<sup>nd</sup> Annual Conference and FDA NER – Regional Milk Seminar. “Best Management Practices of Separated Solids for Cow Bedding”. 23 attended.

09/21/2015 Cortland, NY. NYS Conservation District Employee’s Association/USDA-NRCS/NYS Soil and Water Conservation Committee – 2015 Conservation Skills Workshop. “Whole Farm Electrical Systems”. 9 attended.

09/15/2015 Lake Placid, NY. New York State Cheese Manufacturers’ Association – Fall Meeting. “On-Farm Anaerobic Digestion in New York State”. 32 attended.

09/02/2015 Auburn, NY. Sustainable Agricultural Initiative – Dairy Work Group meeting. “Overview and discussion on the Cornell PRO-DAIRY Environmental Systems program”. 23 attended.

08/18/2015 Genoa, NY. New York Cow Power Coalition – ADG Tour. “NYS On-Farm ADG: Critical Points”. 36 attended.

04/02/2015 Seattle, WA. Livestock and Poultry Environmental Learning Center Waste 2 Worth 2015 Conference. “Coupling Dairy Manure Anaerobic Digesters with Commercial Greenhouses: An Assessment of Technical and Economic Feasibility”. 25 attended.

03/31/2015 Seattle, WA. Livestock and Poultry Environmental Learning Center Waste 2 Worth 2015 Conference. “Two-year Continuously-Mixed Farm-Based Anaerobic Co-digestion System Monitoring – Final Project Results”. 48 attended.

03/13/2015 Syracuse, NY. The 2015 NYS Conservation District Employees’ Association, Inc. and the NYS Soil and Water Conservation Committee: Annual Training Session and Water Quality Symposium. “Cow Comfort and Well-Being”. 39 attended.

03/11/2015 Syracuse, NY. The 2015 NYS Conservation District Employees’ Association, Inc. and the NYS Soil and Water Conservation Committee: Annual Training Session and Water Quality Symposium. “Manure Storage Covers”. 34 attended.

03/11/2015 Syracuse, NY. The 2015 NYS Conservation District Employees' Association, Inc. and the NYS Soil and Water Conservation Committee: Annual Training Session and Water Quality Symposium. "Advanced Manure Treatment". 34 attended.

03/06/2015 Webinar. Livestock and Poultry Learning Center – Monthly Webcast Series. "A Novel Approach to Confined Calf Barn Ventilation. 62 listened live and recorded for others to listen later.

01/28/2015 Ithaca, NY. New York State Soil and Water Conservation Technical Advisory Committee. "Manure Storage: Impermeable Cover and Flare Systems". 20 attended.

12/04/2014 Syracuse, NY. 2014 NRCCA Conference. "Manure Treatment Systems". 32 attended.

12/04/2014 Syracuse, NY. 2014 NRCCA Conference. "Air Emissions in Dairy Systems". 48 attended.

09/23/2014 Ithaca, NY. State of New York, Soil and Water Conservation Committee. "Dairy Manure Treatment and Storage". 34 attended.

06/10/2014 Ithaca, NY. Argentine Contingency. "Overview of Dairy Cow Comfort". 8 attended.

06/07/2014 Lake Placid, NY. North Country Clean Energy Conference. "Anaerobic Digestion – Benefits, Challenges, and Use in NYS." (presented by Tim Shelford) 12 attended.

04/23/2014 Auburn, NY. Homestead Large Animal – Customer Appreciation Evening. "Housing Considerations for New Borne Dairy Calves". 125 attended.

04/10/2014 Ithaca, NY. Wimm-Bill-Dann-Cornell Dairy Courses; Session II. "Cow Comfort". 24 attended.

04/08/2014 Ithaca, NY. Wimm-Bill-Dann-Cornell Dairy Courses; Session II. "Housing Considerations and Ventilation of Calf Facilities". 24 attended.

03/20/2014 Liverpool, NY. Northeast Dairy Producers Association – 2014 Bi-annual Meeting. "Let's talk about extreme weather: Producer perspectives and adaptations for dairy farming in the Northeast". 106 attended.

03/12/2014 Geneva, NY. Kesica Veterinary Clinic – 2014 Spring Producer Meeting. "OSHA Requirements for Dairy Farms". 56 attended.

03/11/2014 Parish, NY. Dairy Health & Management Services – Producer Meeting. "Ventilation of Calf Facilities". 13 attended.

01/17/2014 Webinar. Livestock and Poultry Learning Center – Monthly Webcast Series. “Experiences with Nutrient Management and Capture in New York State. 65 Listened live and recorded for others to listen later.

01/13/2014 Webinar. Penn State Extension – Tech Tuesday Webcast Series. “A Novel Approach to Confined Calf Barn Ventilation. 20 estimated live listeners and recorded for others to listen later.

12/04/2013 Rochester, NY. Western New York Dairy, Livestock and Field Crop Team of Cornell Cooperative Extension – Calf Congress. “Group Housing Systems Methods to Provide Consistent Air Quality”. 200 attended.

12/04/2013 Syracuse, NY. 2013 NRCCA Conference. “OSHA Update”. 55 attended.

10/01/2013 Auburn, NY. Farm Credit East Dairy Industry Seminar “Manure Systems”. 74 attended.

02/04/2013 Syracuse, NY. O’Brien & Gere. Summit on the New York Dairy Food Processing Industry “Whey & Manure Management on the Farm. Potential for Renewable Energy Generation”. 45 attended.

01/23/2013 Rochester, NY. Rochester Institute of Technology. Golisano Institute for Sustainability - Seminar. “Sustainability of the New York State Dairy Industry: Challenges and Opportunities”. 55 attended

09/18/2012 Oneonta, NY. Hometown Energy Group. Hometown Energy Group: Information Session III - Bio-Energy for Heat, Electricity and Transportation Fuel. “Agricultural Digesters – Case Study”. 26 attended.

07/30/2012 Syracuse, NY. USDA-NRCS Agricultural Air Quality Task Force 2012 annual meeting. “National Air Emissions Monitoring Study – Site NY5B Monitoring Results”. 33 attended.

06/07/2012 Ithaca, NY. Alpina Foods Training Program – Directive Team. “Sustainable Food Systems: Environmental Issues”. 7 attended.

05/01/2012 Covington, NY. Synergy Biogas LLC Ribbon Cutting Ceremony. “Cornell’s role in manure-based anaerobic digester development”. 75 attended.

04/03/2012 Argyle, NY. Genex Annual Membership Meeting. “Heat Stress Mitigation”. 44 attended.

03/27/2012 Syracuse, NY. PRO-DAIRY/USEPA AgSTAR/USDA-NRCS/NYSERDA - Got Manure? Enhancing Environmental and Economic Sustainability National Conference. “Anaerobic Digestion: The Cornerstone of an Integrated Dairy Manure Handling and Treatment System”. 305 registered.



03/07/2012 Syracuse, NY. 2012 NEDPA Bi-Annual Conference. “Challenges and Opportunities for Dairy Environmental Management Systems”. 425 registered.

02/09/2012 Mount Pleasant, MI. Great Lakes Regional Dairy Conference. “A Little Bit of *Almost* Everything...A Smorgasbord” 375 registered.

12/16/2011 Batavia, NY. USDA-NRCS/Genesee County Soil & Water Conservation District. Clean Air Agricultural Solutions Forum. “What’s all the Stink About/Clean Air Mitigation Techniques”. 28 attended.

11/15/2011 Mount Morris, NY. McLanahan Corporation 2011 Sand Solutions Conference and Tour. “Retrofitting an Existing Site to Sand Bedding and Improving Ventilation”. 34 attended.

08/07/2011 Kansas City, KS. 96<sup>th</sup> Annual Meeting and Professional Improvement Conference – National Association of County Agricultural Agents. “Community Anaerobic Digesters”. 12 attended.

05/12/2011 Boise, ID. U.S. Environmental Protection Agency – AgSTAR Program. 2011 Conference. “A Community Digester Feasibility Study for Lowville, New York: Biomass, Biogas and Economic Assessments and Implications”. 250 registered.

03/30/2011 Cortland, NY. New York State Department of Environmental Conservation – CAFO Inspector Training Program. “Basis of On-farm Anaerobic Digestion”. 28 attended.

10/18/2010 Syracuse, NY Cornell Nutrition Conference 2011. “National Air Emissions Monitoring Study – Dairy Component Initial Findings”. ~225 registered.

06/08/2010 Beltsville, MD. University of Maryland/USDA-BARC anaerobic digester meeting. “Anaerobic Digestion Program in New York State” 26 attended.

04/27/2010 Green Bay, WI. U.S. Environmental Protection Agency – AgStar Program. 2010 Conference. “Innovation Center for US Dairy – Dairy Power Initiative Update”. 325 registered.

04/16/2010 Ithaca, NY. Junior Dairy Leader Program. “Dairy Environmental Systems Engineering - Overview”. 24 attended.

04/13/2010 Ithaca, NY. Cornell College of Veterinary Medicine VTMED 6430 Class. “Dairy Manure Treatment Systems: Affects on Pathogens”. 23 attended.

03/04/2010 Liverpool, NY. Northeast Dairy Producers Association 2010 Bi-Annual Conference. “Update on the National Air Emissions Monitoring Study – Dairy Component”. ~550 registered

03/03/2010 Liverpool, NY. Northeast Dairy Producers Association 2010 Bi-Annual Conference. “25% Reduction in US Dairy Industries’ Carbon Foot Print by 2020”. ~550 registered

01/26/2010 Batavia, NY. Upstate Farms Annual Producer Meeting. “Anaerobic Digestion – Update for New York State” and “Dairy Manure Treatment Systems”. ~ 45 attended.

11/19/2009 Lancaster, PA. McLanahan 2009 Sand Solutions Conference. “Integrating Your Dairy Manure Treatment System into Your Environmental Footprint”. 42 registered

09/28/2009 Madison, WI. Iowa State University – Energy Production from Anaerobic Digestion of Dairy Manure. “Dairy Derived Biogas Clean-up Options and Costs”. 122 registered

09/28/2009 Madison, WI. Iowa State University – Energy Production from Anaerobic Digestion of Dairy Manure. “Energy Use and Production on US Dairy Farms”. 122 registered

08/19/2009 Ithaca, NY. Cornell Basic Dairy Nutrition. “Environmental Aspects of Dairy; Current Perspectives & Future Implications”. 57 attended.

07/07/2009 Ithaca, NY. 2009 Summer Dairy Institute. “Pre-Weaned Calf Housing: Design and Management”. 20 attended.

06/02/2009 Ithaca, NY. 2009 Summer Dairy Institute. “National Air Emissions Study - Dairy Industry Update” and “Manure Treatment for Dairy Farms”. 20 attended.

03/25/2009 Adams, NY. Blue Seal Richer Dairy Nutrition. “Carbon” and Manure Storage Covers”. 31 attended.

03/24/2009 Canton, NY. Blue Seal Richer Dairy Nutrition. “Carbon” and Manure Storage Covers”. 31 attended.

03/23/2009 Lowville, NY. Blue Seal Richer Dairy Nutrition. “Carbon” and Manure Storage Covers”. 31 attended.

02/27/2009 Warsaw, NY. Western Crop Management Annual Member Conference. “Carbon” and Manure Storage Covers”. 135 registered.

02/25/2009 Baltimore, MD. U.S. Environmental Protection Agency – AgStar Program. 2009 Conference. “Preliminary Findings from Monitoring Seven Dairy Farm Digesters in NY State following the ASERTTI protocol”. 275 registered.

01/14/2009 Oshkosh, WI. Annual Wisconsin Frame Builders Conference and Tour. “Pre-weaned Calf Housing Design and Management”. 24 attended.

11/12/2008 Liverpool, NY. 9<sup>th</sup> Annual Fall Dairy Conference. “Dairy Freestall Barn Design – A Northeast Perspective”. 225 registered.

11/04/2008 Baldwinsville, NY. Blue Seal Blue Seal Richer Dairy Nutrition Producer Meeting. “Clean Air and the Modern Dairy Operation”. 18 attended.

10/28/2008 Middlebury, VT. Soil and Water Annual Conservation Meeting. “Manure Treatment Systems for Dairy Farms”. 26 attended.

10/7/2008 Columbus, OH. The Ohio Department of Agriculture; 2008 Dairy Quality Conference. “Anaerobic Digestion: Function, Flow, By-Products, and Economics”. 110 Registered.

08/13/2008 Ithaca, NY. Cornell Advanced Dairy Nutrition and Management. “Facility Considerations for Cow Cooling”. 62 attended.

08/06/2008 Seneca Falls, NY. Empire Farm Show – Dairy Profit Seminars. “Dairy Facilities; Create a healthy, productive environment for cows and people”. ~100 attended.

07/06/2008 Ithaca, NY. 2008 Summer Dairy Institute. “Role of Facility Design and Ventilation on Calf Health”. 22 attended.

06/02/2008 Ithaca, NY. 2008 Summer Dairy Institute. “Natural Ventilation of Dairy Barns” and “Mechanical Ventilation of Dairy Barns”. 22 attended.

06/02/2008 Ithaca, NY. 2008 Summer Dairy Institute. “National Air Emissions Study - Dairy Industry Update” and “Manure Treatment for Dairy Farms”. 22 attended.

05/31/2008 Ithaca, NY. Junior Dairy Leader Program. “Dairy Housing and Waste Management Program Overview”. 19 attended.

05/29/2008 Victor, NY. Nutreco Canada Agressearch Transition Cow Meeting. “Facilities for Transition Cows”. 28 attended.

05/22/2008 Ithaca, NY. Herd Health and Biosecurity Risk Evaluation using the NYSCHAP Model Workshop. “Manure Treatment Systems for Dairy Farms” 13 attended.

03/20/2008 Paris, France. Gaz de France. “US Anaerobic Digestion Overview” 13 attended.

03/18/2008 Munich, Germany. Schmuck Biogas Corp. “US Anaerobic Digestion Overview” 7 attended.

03/06/2008 Syracuse, NY. Northeast Dairy Producers Association Bi-Annual Conference. “National Air Emissions Monitoring Study Update”. ~550 registered.

04/04/2008 Syracuse, NY. NYSERDA Innovations in Agriculture Conference. “Digester Systems in Europe” and Panel Moderator for: “Farm Digesters in New York State Operators Panel”. 120 registered.

02/19/2008 Victor, NY. Nutreco Canada Agressearch Transition Cow Meeting. “Facilities for Transition Cows”. 21 attended.

01/09/2008 Auburn, NY. New York State Agricultural Business Society Annual Conference. “National Air Emissions Study - Dairy Industry Update”. 62 attended.

09/27/2008 Blue Mountain Lake, NY. New York State Cattle Health Assurance Program. “Post-Digested Separated Manure Solids as Freestall Bedding; a Case Study” and “Role of Facility Design and Ventilation on Calf Health”. 16 attended.

11/15/2007 Janesville, WI. McLanahan Corporation Sand Solutions Conference. “Theoretical Heating Requirements for Anaerobic Digestion of Sand-Laden Dairy Manure.” 73 attended.

11/01/2007 Kansas City, KS. DeLaval environmental and cow comfort roundtable discussion. “Nutrient cycling: now and in the future.” 17 attended.

06/7/2007 Ithaca, NY. Cornell Veterinary College – Summer Dairy Institute 2007. “Dairy Farm Manure and Nutrient Management” and “Air Emissions from Dairy Facilities”. 20 registered.

04/17/2007 Syracuse, NY. NYSERDA Innovations in Agriculture Conference. “Total Annual Cost Analysis for Patterson Farms”, “National Air Emissions Monitoring Study – Update”, “Advanced Solid-Liquid Separation”, and Panel Moderator for: “Digester Operators Panel – Farm and Wastewater Plant Digesters”. 155 registered.

04/04/2007 Manitowoc, WI. University of Wisconsin Extension. “Pros and Cons of different types of digesters”. 150 registered.

03/21/2007 Burlington, VT. National Dairy Calf & Heifer Association. “Role of Facility Design and Ventilation on Calf Health”. 205 registered.

3/13/2007 Lansing, MI. Michigan Department of Environmental Quality. “Evaluating paybacks of on-farm anaerobic digesters”. 75 attended.

02/28/2007 Auburn, NY. Northeast Dairy Producers Association Annual Member Conference. “Manure Treatment Systems”. 200 attended.

02/27/2007 Auburn, NY. Northeast Dairy Producers Association Annual Member Conference. “Update on Dairy Air Emissions”. 75 attended.

02/02/2007 Gainesville, FL Manure Lunch Bunch Group. “National Air Emissions Monitoring Study – Update”. 22 attended.

12/6/2006 Waterloo, NY Northeast Region Certified Crop Advisor Training. “Manure treatment systems for dairy farms” and “Air emissions update”. 190 attended.

08/4/2006 Ithaca, NY SERA17 Annual Meeting and P Modeling Meeting. “Long-term P solutions: what can the engineers do? 61 attended.

06/12/2006 Ithaca, NY. Cornell University – 2006 Northeast Agribusiness Seminar. “State of the Art in Anaerobic Digestion”. 25 attended.

06/7/2006 Ithaca, NY. Cornell Veterinary Collage – Summer Dairy Institute 2006. “Dairy Farm Manure and Nutrient Management” and “Air Emissions from Dairy Facilities”. 20 registered.

05/17/2006 Puerto Vallarta, México. Expo Leche 2006. “Energy from Manure and Nutrient Management.” 100 registered.

05/10/2006 Chicago, Il. National Milk Producers Producer’s Federation. “National Air Emissions Monitoring Study – New York State Dairy Candidate Pool”. 40 attended.

04/26/2006 Madison, WI. U.S. Environmental Protection Agency – AgStar Program. 2006 Conference. “European Digester Technology”. 250 registered.

03/09/2006 Syracuse, NY. Northeast Dairy Producers Association Bi-Annual Conference. “Update on Dairy Air Emissions”. ~550 registered.

01/30/2006 Tampa, NY. 45<sup>th</sup> Annual National Mastitis Council Conference. “Use of post-digested separated manure solids as Freestall bedding; A Case Study”. ~300 registered.

11/30/2005 Waterloo, NY. 2005 Northeast Certified Crop Advisor Conference. “Dealing with Manure Solids” and “Dairy Facility Air Emissions; the Need to Assess and How to Do So”. 160 attended.

11/17-18/2005 Batavia, NY. McLanahan Corporation's Sand-Laden Manure Conference. “Economics of Sand-Manure Separation and Advanced Treatment”. 55 attended.

11/10/2005 Auburn, NY. Soil and Water Conservation Society Empire State Chapter Annual Mtg. “Air Emissions Issues from the Barn and Manure Storage”. 44 attended.

08/24/2005 Harrisburg, PA. Renewable Energy...A Pennsylvania Reality Conference. “Anaerobic Digestion of Dairy Manure; An Overview”

08/17/2005 Chazy, NY. Cornell Dairy Nutrition Short Coarse. “Basics of Dairy Facilities”. 62 attended.

08/02/2005 Rochester, NY. Soil and Water Conservation Society. “Cost and Benefits of Anaerobic Digestion”. 27 attended.

06/03/2005 Beltsville, MD. National Milk Producers Federation Environmental Task Force Meeting. “Odor and Air Emissions Mitigation Options for Dairy Farmers” 39 attended.

05/31/2005 Ithaca, NY. Cornell Summer Dairy Institute. “Dairy Ventilation Systems” and “Manure Removal Systems”. 24 attended.

05/25/2005 Wilkes-Barre, PA. MAC Regional Dairy Extension Program. “Air Emissions from Dairy Farms – What’s up?” 35 attended.

05/08/2005 Montpelier, VT. Vermont Department of Agriculture. “Air Emissions from Dairy Farms – What’s up?” 17 attended.

05/08/2005 Northern VT. Vermont Cooperative Extension. “Air Emissions from Dairy Farms – What’s up?” 11 attended.

03/29/2005 Corning, NY. Ontario Large Herd Group. “Manure Treatment and Handling in New York State”. 66 attended.

03/15/2005 Syracuse, NY. NRAES Manure Handling and Treatment Conference. “Manure Treatment, Water Quality, and Air Emissions: They Are All Link” and “Anaerobic Digestion at Matlink Dairy Farm”. Over 200 Registered.

03/01/2005 Syracuse, NY. NEDPA Annual Meeting. “Dairy Farm Selection and Issues for the National Air Emission Monitoring Study”. 125 Registered.

02/17/2005 Westminster, MD. Maryland Dairy Association Annual Meeting. “Challenges and Opportunities in Manure Management” and “Air Emissions from Dairy Farms – What’s up?” 100 Registered.

01/26/2005 Syracuse, NY. NRAES Dairy Calves and Heifers: Integrating Biology and Management. “Pre-Weaned Calves: Housing and Considerations.” ~280 Registered.

01/11/2005 Syracuse, NY. Farm Credit Annual Dairy Update Meeting. “Air Emissions from Dairy Farms – What’s up?” 84 attended.

11/30-12/2/2004 Largo De Garda, Italy. Servizio Assistenza Tecnica Allevamenti Annual Conference. “Cow Comfort”, “Housing for Dairy Replacements”, and “Heat Stress Mitigation Techniques.” 105 attended.

11/17-18/2004 Lansing, MI. McLanahan Corporation's Sand-Laden Manure Conference. Economics of Sand-Manure Separation. 75 attended.

11/14-15/2004 Canandaigua, NY. Effective Handling of Sand-Laden Dairy Manure. PRO-DAIRY and College of Veterinary Medicine Fall Dairy Conference. Canandaigua Inn on the Lake, November 11 – 12, 2004. 175 attended.

11/3-11/5/2004 Indianapolis, Indiana. Producing Methane and Energy from Manure. 2004 Annual Dairy Practice Council Meeting. 30 attended.

9/29/2004 Tulare, California. Cow cooling and heat stress relief. Southern California Edison. 40 attended.

8/26/2004 Chautauqua County Innovative Manure Treatment System Tour and Discussion. Invited Speaker. 51 attended.

06/7/2004 Cornell University. Summer Dairy Institute at the College of Veterinary Medicine. Invited Speaker. “Tunnel Ventilation for Freestall Barns”, “Natural Ventilation for Freestall Barns”, and “Heat Stress Mitigation Techniques”. 14 students.

06/11/2004 Norbco, Inc. Invited Speaker. “Tunnel ventilation for cow barns” and “Cow Comfort”. Annual Norbco Sales Meeting. 13 attended.

05/20/2004 Cornell University. NYSCHAP Herd Health and Biosecurity Risk Evaluation Meeting. “Farmstead planning for biosecurity”. 9 attended.

04/29/2004 Cobleskill, NY. Invited Speaker. “Flooring for dairy cows” and “Dairy barn design issues”. 30 attended.

03/11/2004 Philadelphia, PA 104<sup>th</sup> Penn Annual veterinary Medicine Conference. Invited Speaker. “Calf and heifer facilities”, “Ventilation of dairy facilities”, “Dry cow/transition cow facilities”, “Flooring for dairy cows”, and “Photoperiod manipulation”. 26 attended.

01/28/2004 Syracuse, NY. NYSERDA’s Innovations in Agriculture Conference. Invited Speaker. “Energy Management for Heat Stress Relief” ~50 people.

01/28/2004 Syracuse, NY. NYSERDA’s Innovations in Agriculture Conference. Invited Speaker. “Removing sand bedding” ~50 people.

12/18/2003 Burlington, VT. Invited speaker. Poulin Grain Corporations facility workshop. Dairy Facility Evaluation Techniques. 31 attended.

10/24/2003 Cobleskill, NY. Invited speaker-SUNY Cobleskill. Flooring Considerations for Dairy Cows. 12 Students.

8/13/2003 Chazy, NY. Invited speaker-Cornell Basic Nutrition Conference. Dairy Facility Basics. 55 attended.

7/10/2003 Sioux Falls, SD. Invited speaker. McLanahan Corporation's Sand-Laden Manure Conference. Economics of Sand-Manure Separation. 40 attended.

7/2/2003 Cornell University. Invited speaker. Farmstead layout for Biosecurity. NYSCHAP program. 7 attended.

6/3-7/2003 Ragusa, Italy. Invited speaker. CoRFiLaC Nutrition and Management of Dairy Cattle. Cow Comfort Guideline, Facilities for Dry and Fresh Cows, Newborn Calf Housing, and Transition and Adolescent Heifer Housing. 90 attended.

4/9/2003 Troy; NY. Invited speaker. NYSCHAP program. Sand bedding: from stall to storage. 8 attended.

- 4/3/2003 Westmoreland, NY. Invited discussion group leader. County dairy group. 9 attended.
- 3/19/2003 Greenwich, NY. Trouble Shooting Cow Comfort on Your Farm. Battenkill Veterinary Clinic client appreciation program. Invited speaker. 40 attended.
- 02/27/2003 Malone, NY. Regional Workshop for Dairy Facility Contractors and Suppliers. Considerations in Flooring and Facilities for dairy replacements. 11 attended.
- 02/18-20/2003 Harrisburg, PA. NRAES Freestall Barn and Milking Center Construction: Methods and Materials program. “Flooring Considerations for Dairy Cows” and “Providing a Cow-Comfortable Environment”. 200 Registered.
- 01/24/2003 Syracuse, NY. New York State Cattle Health Assurance Program. “Sand Bedding for Stalls” and “Economics of Sand-Manure Separation”. 12 NYSCHAP staff.
- 01/13/2003 Randolph, VT. Vermont Tech – Cornell Winter Dairy Management School. “Photoperiod Manipulation – Principles and Design” ~45 people.
- 11/15/2002 Altoona, PA. McLanahan Corporation’s Sand-Laden Manure Conference. “Ins and Outs of Sand Bedding” and “Economics of Sand-Manure Separation”. 75 attended.
- 8/12 – 8/13/2002 Ithaca, NY. Advanced Dairy Nutrition and Management for Agri-service Professionals Program. “Facilities for Transition Cows”, “Newborn and Transition Calf Housing”, and “Photoperiod Considerations for Lactating Cows”. 80 attended.
- 4/23/2002 Geneva, NY. Keseca Veterinary Clinic. “Planning Your Facility – Building Your Plan”. 75 people.
- 3/29/2002 Grandville, NY. Grandville Veterinary Clinic. “Improvements to Tie Stall Barns to Improve Cow Comfort and Profitability. 8 participants.
- 3/28/2002 Grandville, NY. Grandville Veterinary Clinic. Regional Veterinary practice round table discussion. 15 Veterinarians from Grandville, Batten Kill, Valley, and Ruppert Valley Veterinary Clinics.
- 3/21/2002 Penn Yan, NY. East View Veterinary Clinic Annual Customer Appreciation Program. “Photoperiod Manipulation – Principles and Design”. 65 people.
- 2/20/2002 Waterville, MA. Feed Commodities International. “Trouble Shooting Cow Comfort on Your Farm” and “Photoperiod Manipulation – Principles and Design” 53 people.
- 1/25/2002 Syracuse, NY. NYSCHAP Monthly Meeting. “Housing and Health for Newborn and Transition Calves”. 15 veterinarians.
- 01/22/2002 Lewisburg, PA. Central Susquehanna Dairy Day. “Considerations in Flooring”. 45 people.



01/16/2002 Plattsburg, NY. Clinton County Large Herd Discussion Group. “Sand Bedding from Stall to Storage”. 18 people.

11/2/2001 Agway – Transition Cow Conference. “Cow Comfort for Transition Cows”. 35 participants.

10/30/2001 Blue Seal Feeds – Transition Cow Conference. Key note speaker. “Trouble Shooting Cow Comfort on Your Farm”. 60 participants.

10/10/2001 Cargill Animal Nutrition regional meeting. “Dairy Calf and Heifer Housing”. 30 participants.

10/10/2001 Blue Seal Feeds annual Dairy Sales Meeting. “Designing Dairy Facilities for Cow Comfort”. 45 participants.

9/20/2001 Attica Veterinary Clinic, Attica NY. : “Modern Dairy Facilities.” 9 participants.

04/03/2001 Penn Yan, NY Eastview Veterinary Clinic Annual Dairy Producers Meeting “Cow Comfort for Tie stall and Freestall Operations”. ~90 people.

02/01/2001 Harrisburg, PA. NRAES Milking Systems and Parlors Conference. “Environmental Control of Today’s Milking Center.” 325 people.

10/24-26/2000 Guest speaker for Pfizer Animal Health program: “Climate Control and Housing Management for Dairy Replacements.” 36 attended.

4/21/2000 Guest speaker at SUNY Cobleskill. “Photoperiod Manipulation for Dairy Cows” and “Translucent Roofed Structures”. Cobleskill, NY ~ 10 students.

2/22 - 2/23/2000 Two programs in western Vermont for Feed Commodities International. Ideas to Improve Dairy Operations and Profits. Spoke on “Troubleshooting Cow Comfort on Your Farm” and “Photoperiod Manipulation: Is it for you?” ~ 80 attended.

2/1 – 2/3/2000 NRAES Dairy Housing and Equipment Systems Conference – Harrisburg, PA. Conference Chairman and presented two papers “Tunnel Ventilation for Freestall Barns” and “Considerations in Flooring”. ~350 people.

1/26/2000 Dairy Farmers of America Conference - Lake Placid, NY. Talk on “Facility Design for Cow Comfort”. 19 people.

2/11/1999 Western New York Dairy Congress – Delevan, NY. Talk on “Facilities Design for Cow Comfort” 250 people.

## PUBLICATIONS – TECHNICAL PAPERS

Shelford, T.J., **C.A. Gooch**, and L.D. Albright. 2014. Modeling of the use of Waste Heat and Surplus Electrical Electricity from Dairy Anaerobic Digestion Systems to Supply the Needs of Greenhouses. Developed for presentation (only) at the 2014 ASABE Annual International Meeting, July 13-16, 2014. ASABE Paper No. 14-1913623. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659. 25 attended.

Shelford, T.J. and **C.A. Gooch**. 2012. Estimating Farm Size Required to Economically Justify Anaerobic Digestion on Small Farms. Proceedings from the 2012 Got Manure? Enhancing Environmental and Economic Sustainability national conference. March 27 – 29, 2012 Holiday Inn, Syracuse-Liverpool, NY. Cornell University, PRO-DAIRY Program.

Labatut, R.A. and **C.A. Gooch**. 2012. Monitoring of Anaerobic Digestion Process to Optimize Performance and Prevent System Failure. Proceedings from the 2012 Got Manure? Enhancing Environmental and Economic Sustainability national conference. March 27 – 29, 2012 Holiday Inn, Syracuse-Liverpool, NY. Cornell University, PRO-DAIRY Program.

Hjort-Gregersen, K., D. Blandford, and **C.A. Gooch**. 2011. Biogas from Farm-based Biomass Sources Developments in Europe and the US. *EuroChoices*, Volume 10, Issue 3, pgs. 18-23.

Pronto, J.P., and **C.A. Gooch**. 2010. Greenhouse Gas Emission Reductions for Seven On-Farm Dairy Manure-based Anaerobic Digestion Systems – Final Results. Written for presentation at the 2010 ASABE International Air Quality and Manure Management Symposium, Dallas, Texas, September 13 – 16, 2010. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Bentley, C.A., **C.A. Gooch**, J.L. Pronto, and N.R. Scott. 2010. Greenhouse Gases from Community Anaerobic Digester in New York State with Mixed Organic Wastes. Written for presentation at the 2010 ASABE Annual International Meeting, June 20 – June 23, 2010. ASABE Paper No. 10-09892. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Pronto, J.P., **C.A. Gooch**, S.T. McGlynn. 2010. Biomass and Biogas Quantification and Implications: A Community Digester Feasibility Study for Lowville, NY. Written for presentation at the 2010 ASAE Annual International Meeting, June 20 – June 23, 2010. ASABE Paper No. 10-09915. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Gloy, B., **C.A. Gooch**, J.L. Pronto. 2010. Anaerobic Digestion and Biogas Utilization Options for Lewis County Community Digester Project: Economic Assessments and Implications. Written for presentation at the 2010 ASAE Annual International Meeting, June 20 – June 23, 2010. ASABE Paper No. 10-09916. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Wright, P.E., **C.A. Gooch**, A.W. Wedel, L. Geohring. 2010. Procedures for Evaluating Undesigned Manure Transfer Systems in New York State. Written for presentation at the 2010 ASAE Annual International Meeting, June 20 – June 23, 2010. ASABE Paper No. 10-08579. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Shepherd T.A., **C.A. Gooch**, V. Johnson, and T. Rensch. 2009. On-Farm Comparison of Traditional and Advanced Mechanical Solid Separation for Dairy Farm. Written for presentation at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-7044. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Pronto, J.L. and **C.A. Gooch**, and T. Shepherd. 2009. Methods of Data Collection and Lessons Learned when Monitoring On-farm Anaerobic Digesters Following the ASERTTI Protocol. Written for presentation at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-6946. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**C.A. Gooch**, D.C. Ludington and J.L. Pronto. 2009. Normalizing Various Manure and Other Anaerobic Digester Influent Sources on a Lactating Cow Basis for Use in Quantifying Anaerobic Digester Performance. Presented (no paper available) at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-7032. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**C.A. Gooch**, J.L. Pronto, and T. Shepherd. 2009. Monitoring Two On-farm anaerobic digesters in New York State for One Year following the ASSERTTI Protocol – Final Results. Written for presentation at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-7003. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Pronto, J.L. and **C.A. Gooch**. 2009. Greenhouse Gas Emission Reductions Due to Anaerobic Digestion of Manure. Written for presentation at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-7015. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Pronto, J.L., **C.A. Gooch**, and K. Gebremedhin 2009. A Web-based Gas Production Model for Plug-Flow Digesters. Written for presentation at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-7018. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Bishop, G.C., R.T. Burns, T.A. Shepherd, L.B. Moody, **C.A. Gooch**, R. Spajic, and J.L. Pronto. 2009. Evaluation of Laboratory Biochemical Methane Potentials as a Predictor of Anaerobic Dairy Manure Digester Biogas and Methane Production. Written for presentation at the 2009 ASAE Annual International Meeting, June 21 – July 24, 2009. ASABE Paper No. 09-6769. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and J.L. Pronto. 2008. Anaerobic Digestion Monitoring of 7 On-Farm Systems Following the New EPA Protocol – Preliminary Findings. Presented at the 2008 ASAE Annual International Meeting, June 29 – July 2, 2008. ASABE Paper No. 08-4727. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Pronto, J.L. and **C.A. Gooch**. 2008. Pump Test Calibration Tests as a Method of Determining Influent Mass Flow to a Dairy Farm Anaerobic Digester. Presented at the 2008 ASAE Annual International Meeting, June 29 – July 2, 2008. ASABE Paper No. 08-5092. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Heber, A.J., B.W. Bogan, J. Ni, T.T. Lim, J.C. Ramirez-Dorronsoro, E.L. Cortus, C.A. Diehl, S.M. Hanni, C. Xiao, K.D. Casey, **C.A. Gooch**, L.D. Jacobson, J.A. Koziel, F.M. Mitloehner, P.M. Ndegwa, W.P. Robarge, L. Wang, and R. Zhang. 2008. The National Air Emissions Monitoring Study: Overview of Barn Sources. Presented at the 2008 ASABE International Livestock Environment VIII Symposium. Iguassu Falls, Brazil

Inglis, S.F., **C.A. Gooch**, L.R. Jones, and D. Aneshansley. 2007. Cleanout of a Plug-Flow Anaerobic Digester after Five Years of Continuous Operation. Presented at the 2007 International Symposium on Air Quality and Waste Management for Agriculture. Broomfield, CO. September 15-19, 2007.

Inglis, S.F. and **C.A. Gooch**. 2007. Biogas Production Fluctuations Associated with Feeding Frequency for a Mixed Digester. Presented at the Sixth International Dairy Housing Conference, Minneapolis, MN. June 17, 2007. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Inglis, S.F. and **C.A. Gooch**. 2007. Theoretical Heat Needs for Digestion of Raw and Diluted Sand-Laden Dairy Manure. Presented at the Sixth International Dairy Housing Conference, Minneapolis, MN. June 17, 2007. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.**, S.F. Inglis, and P.E. Wright. 2006. Biogas Distributed Generation Systems Evaluation and Technology Transfer Project – Interim Report. NYSERDA Project No. 6597.

Inglis, S.F., **C.A. Gooch**, and M.B. Michael Timmons. 2006. Engineering Analysis of Digesting Sand-Laden Dairy Manure. Presented at the 2006 ASAE Annual International Meeting, July 9 – 12, 2006. ASABE Paper No. 06-4196. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Wright, P.E., **C.A. Gooch**, D. Sullivan, and R. Young. 2006. Procedures for Evaluating Undesigned Manure Storage Facilities in New York State. Presented at the 2006 ASAE Annual International Meeting, July 9 – 12, 2006. ASABE Paper No. 06-2158. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Wright, P.E., **C.A. Gooch**, R.W. Gullick, R.A. Brown, B.W. Auvermann, L. Marsh, T. Harter, and V. Johnson. 2006. Strategies for Minimizing AFO Waste Impacts on Drinking Water Sources. Presented at the 2006 ASAE Annual International Meeting, July 9 – 12, 2006. ASABE Paper No. 06-2158. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.**, S.F. Inglis, and K.J. Czymmek. 2005. Mechanical Solid-Liquid Manure Separation: Performance Evaluation on Four New York State Dairy Farms – A Preliminary Report. Presented at the 2005 ASAE Annual International Meeting, July 17 – 20, 2005. ASAE Paper No. 05-4104. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Gebremedhin, K.G., B. Wu, **C.A. Gooch**, P.E. Wright, and S.F. Inglis. 2005. Heat Transfer Model for Plug Flow Anaerobic Digesters. Transactions of ASAE, Vol. 48(2): 9 pgs.

Gebremedhin, K.G., B. Wu, **C.A. Gooch**, P.E. Wright, and S.F. Inglis. 2005. Heat Transfer Model for Plug Flow Anaerobic Digesters. Presented at the 2005 ASAE Annual International Meeting, July 17 – 20, 2005. ASAE Paper No. 05-427. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and R.R. Stowell. 2004. Tunnel Ventilation for Freestall Facilities – Design, Environmental Conditions, Cow Behavior, and Economics. In: *New Trends in Farm Buildings, Proceedings of International Symposium of CIGR*. Ed.: Meneses, J.F., L.L. Silva, F. Baptista, and V.F. da Cruz. University of Evora, Evora, Portugal.

Stowell, R.R. and **C.A. Gooch**. 2004. Advantages and Limitations of Hot-Weather Ventilation Systems that Are Based on Air Velocity Design Criteria. In: *New Trends in Farm Buildings, Proceedings of International Symposium of CIGR*. Ed.: Meneses, J.F., L.L. Silva, F. Baptista, and V.F. da Cruz. University of Evora, Evora, Portugal.

Gebremedhin, K.K., B. Wu, **C.A. Gooch**, and P.E. Wright. 2004. Simulation of Heat Transfer for Maximum Biogas Production. Presented at the 2004 ASAE/CSAE Annual International Meeting, August 1 – 4, 2004. ASAE Paper No. 04-4165. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch C.A.**, D. Kirk, and J. Caresses. 2004. Economic Analysis of an Integrated Manure Management System with Sand-Manure Separation, Phosphorus Removal, and Solid-Liquid Separation. Presented at the 2004 ASAE/CSAE Annual International Meeting, August 1 – 4, 2004. ASAE Paper No. 04-4171. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Wright, P.E., S. F. Inglis, J. Ma, **C.A. Gooch**, B. Aldrich, A. Meister, and N. Scott. 2004. Comparison of Five Anaerobic Digestion Systems on Dairy Farms. Presented at the 2004 ASAE/CSAE Annual International Meeting, August 1 – 4, 2004. ASAE Paper No. 04-4032. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and D.C. Ludington. 2003. Lighting Design Considerations for Employment of Photoperiod Management in Freestall and Tie stall Dairy Barns. Presented at the Fifth International Dairy Housing Conference in Fort Worth, Texas. *Dairy Housing V*. The American Society of Agricultural Engineers. St. Joseph, MI.

**Gooch, C.A.** and R.R. Stowell. 2003. Tunnel Ventilation for Freestall Facilities – Design, Environmental Conditions, Cow Behavior, and Economics. Presented at the Fifth International Dairy Housing Conference in Fort Worth, Texas. *Dairy Housing V*. The American Society of Agricultural Engineers. St. Joseph, MI.

**Gooch, C.A.**, A.W. Wedel, and J. Karszes. 2003. Economic Analysis of Mechanical Sand-Manure Separation as Part of an Integrated Manure Management System for Flushed Sand-Laden Dairy Manure. Presented at the 2003 ASAE Annual International Meeting, July 27 – 30, 2003. ASAE Paper No. 03-4016. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Lankering, K., **C.A. Gooch**, and S.F. Inglis. 2003. In-Field Quantification of Fan Performance in Tunnel-Ventilated Freestall Barns. Presented at the 2003 ASAE Annual International Meeting, July 27 – 30, 2003. ASAE Paper No. 03-4014. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Crill, R.L., J.J. Hanchar, **C.A. Gooch**, and S.T. Richards. 2002. Net Present Value Economic Analysis Model for Adoption of Photoperiod Manipulation in Lactating Cow Barns. Presented at the 2002 ASAE Annual International Meeting / CIGR XVth World Congress, July 28 – 31, 2002. ASAE Paper No. 02-4206. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.**, A.W. Wedel, and J. Karszes. 2002. Economic Analysis for a Dairy Waste Treatment System that Employs Mechanical Separation of Bedding Sand from Scraped Sand-Laden Dairy Manure. Presented at the 2002 ASAE Annual International Meeting / CIGR XVth World Congress, July 28 – 31, 2002. ASAE Paper No. 02-4208. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and D.C. Ludington. 2002. Lighting System Considerations and Design Options for Application of Photoperiod Management for Freestall and Tie Stall Barns. Presented at the 2002 ASAE Annual International Meeting / CIGR XVth World Congress, July 28 – 31, 2002. ASAE Paper No. 02-4205. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Inglis, S.F., P.E. Wright, and **C.A. Gooch**. 2002. Computerized Control System for Static Pile Composting of Dairy Manure. Presented at the 2002 ASAE Annual International Meeting / CIGR XVth World Congress, July 28 – 31, 2002. ASAE Paper No. 02-4140. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and S.F. Inglis. 2001. Environmental Conditions in Plastic Film Covered Calf Facilities. Presented at the Six International Livestock Environment Symposium in Louisville, Kentucky. *Livestock Environment VI*. The American Society of Agricultural Engineers. St. Joseph, MI.

Stowell, R.R., **C.A. Gooch**, and S.F. Inglis. 2001. Performance of Tunnel Ventilation for Freestall Dairy Facilities as Compared to Natural Ventilation with Supplemental Cooling Fans. Presented at the Six International Livestock Environment Symposium in Louisville, Kentucky. *Livestock Environment VI*. The American Society of Agricultural Engineers. St. Joseph, MI.

**Gooch, C.A.** and K.K. Gebremedhin. 2001. “Practices that Enhance Post-Frame Construction”. *Frame Building News*. August, 2001. pp. 30-36.

Batchelder, T.L. and **C.A. Gooch**. 2001. The Effect of Alternative Bunk Silo Ballast Systems on the Qualitative Value of Corn Silage. Presented at the 2001 ASAE Annual International Meeting, July 30 – August 1, 2001. ASAE Paper No. 014024. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** 2001. Dry Cow Housing for Photoperiod Manipulation - A First Look. Presented at the 2001 ASAE Annual International Meeting, July 30 – August 1, 2001. ASAE Paper No. 01-4103. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Stowell, R.R., **C.A. Gooch**, and S.F. Inglis. 2001. Environmental Conditions within Tunnel-Ventilated and Naturally Ventilated Dairy Freestall Facilities. Presented at the 2001 ASAE Annual International Meeting, July 30 – August 1, 2001. ASAE Paper No. 01-4099. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Stowell, R.R., **C.A. Gooch**, N. St. Pierre, D. Gaulton, and S.F. Inglis. 2001. Cow Activity and Performance Within Tunnel-Ventilated and Naturally Ventilated Dairy Freestall Facilities. Presented at the 2001 ASAE Annual International Meeting, July 30 – August 1, 2001. ASAE Paper No. 01-4101. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

Wright, P.E., **C.A. Gooch**, and S.F. Inglis. 2001. Biodrying Dairy Manure: Initial Experiences. Presented at the 2001 ASAE Annual International Meeting, July 30 – August 1, 2001. ASAE Paper No. 01-2292. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** 2000. “Application of Tunnel Ventilation to Dairy Freestall Barns”. Presented at the 2000 NABEC Annual Meeting, July 30 – August 2. NABEC Paper No. 2040.

**Gooch, C.A.**, M.B. Timmons, and J. Karszes. 2000. “Economic Analysis of Tunnel Ventilation”. Presented at the 2000 ASAE Annual International Meeting, July 9 –12. ASAE Paper No. 004101. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and S.F. Inglis. 2000. “Environmental Conditions in Plastic-Covered Calf Facilities, A Preliminary Report”. Presented at the 2000 ASAE Annual International Meeting, July 9 –12. ASAE Paper No. 004104. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.** and W.G. Bickert. 1999. “Ventilation Strategies for Environmental Control of Modern Milking Centers”. Presented at the 1999 ASAE Annual International Meeting, July 18-21. ASAE Paper No. 994013. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

**Gooch, C.A.**, and K.K. Gebremedhin. 1999. “Assessment of Failures of Post – Frame Buildings in New York State Due to Snow Load”. Presented at the 1999 ASAE Annual International Meeting, July 18-21. ASAE Paper No. 994013. ASAE 2950 Niles Road, St. Joseph, MI 49085-9659.

## PUBLICATIONS – INVITED PAPERS

Wright, P.E., J. Rennells, A. DeGaetano, and **C.A. Gooch**. 2015. “Impacts of Climate Change on Manure Management.” Proceedings from the 2015 Cornell University Dairy Environmental Systems and Climate Adaptation Conference, July 29 – 30, 2015, Statler Hotel, Cornell University, Ithaca, New York. 128 registered.

Stowell, R.R., C. Powers, J. Heemstra, J. Harrison, E. Whitefield, S. Mukhtar, D. Smith, M. Risse, P. Know, G. Hawkins, **C.A. Gooch**, J. Pronto, L. Jacobson, and D. Schmidt. 2015. “Animal Agriculture in A Changing Climate: A National Approach.” Proceedings from the 2015 Cornell University Dairy Environmental Systems and Climate Adaptation Conference, July 29 – 30, 2015, Statler Hotel, Cornell University, Ithaca, New York. 128 registered.

**C.A. Gooch**. 2013. “Role of Facility Design and Ventilation on Calf Health.” Updated for presentation at the East View Veterinary Clinic Annual Producer Meeting, March 13, 2013, Benton Center, New York. 69 attended.

**Gooch, C.A.** 2010. National Air Emissions Monitoring Study – Dairy Component Initial Findings. Presented at the 2010 Cornell Nutrition Conference for Feed Manufacturers.

**Gooch, C.A.** 2008. Dairy Freestall Barn Design – A Northeast Perspective. Presented at the 9<sup>th</sup> Annual Fall Dairy Conference. 11/12/08

**C.A. Gooch**. 2007. Role of Facility Design and Ventilation on Calf Health. Proceedings from the National Dairy Calf & Heifer Conference. March 20-23, 2007.

**C.A. Gooch**. 2006. Anaerobic Digestion in the United States. Proceedings from the 2006 Hoards Mexico Dairy Conference. May 16-18, 2006.

D.M. Belcher, **C.A. Gooch**, and K.J. Czymmek. 2006. Ammonia Emissions from Dairy Facilities. Proceedings from the 2006 Northeast Dairy Producers Association Biannual Conference, Syracuse, New York. March 8 – 9, 2006.

**C.A. Gooch**, J.S. Hogan, N. Glazier, and R. Noble. 2006. Use of post-digested separated manure solids as Freestall bedding; A Case Study. Proceedings from the 2006 National Mastitis Council Annual Meeting, Tampa, Florida. January 29 – Feb. 2, 2006.

**Gooch, C.A.** 2005. Economics of Sand-Manure Separation - Updated. Proceedings from the 2005 McLanahan Sand-Laden Manure Handling Conference. Batavia, New York. November 17 and 18<sup>th</sup>, 2005.

Cook, D.L., M.A. Cole, **C.A. Gooch**, and K.J. Czymmek. 2005. Overview of the United States Environmental Protection Agency Air Quality Compliance Agreement for Animal Feeding Operations. NEDPA Annual Meeting, Syracuse, NY. March 1, 2005.



**Gooch, C.A.** 2005. Manure Treatment, Water Quality, and Air Emissions: They are All Linked. Proceedings from the Dairy Manure Management: Treatment, Handling, and Community Relations Conference, Syracuse, NY. March 15-17, 2005. NRAES-176.

**Gooch, C.A.** and T. Mathews. 2005. Anaerobic Digestion at Matlink Dairy Farm. Proceedings from the Dairy Manure Management: Treatment, Handling, and Community Relations Conference, Syracuse, NY. March 15-17, 2005. NRAES-176.

**Gooch, C.A.** and D.L. Ludington. 2005. Anaerobic Digestion Performance Goals: Affect on System Components and Costs. Proceedings from the Dairy Manure Management: Treatment, Handling, and Community Relations Conference, Syracuse, NY. March 15-17, 2005. NRAES-176.

Wedel, A.W. and **C.A. Gooch.** 2005. Willow Behrer Farm, Pennsylvania—Case Study. Proceedings from the Dairy Manure Management: Treatment, Handling, and Community Relations Conference, Syracuse, NY. March 15-17, 2005. NRAES-176.

Inglis, S.F., **C.A. Gooch,** and K.J. Czymmek. 2005. Mechanical Solid-Liquid Manure Separation: Application and Performance on Four Dairy Farms. Proceedings from the Dairy Manure Management: Treatment, Handling, and Community Relations Conference, Syracuse, NY. March 15-17, 2005. NRAES-176.

Ludington, D.L. and **C.A. Gooch.** 2005. Feasibility Studies Waste Treatment Systems. Proceedings from the Dairy Manure Management: Treatment, Handling, and Community Relations Conference, Syracuse, NY. March 15-17, 2005. NRAES-176.

**Gooch, C.A.** 2005. Pre-Weaned Calves: Housing and Considerations. Proceedings from the Dairy Calves and Heifers: Integrating Biology and Management Conference, Syracuse, NY. January 25-27, 2005. NRAES-175.

**Gooch, C.A.** 2004. Economics of Sand-Manure Separation. Proceedings from the 2004 McLanahan Sand-Laden Manure Handling Conference. Lansing, MI. November 17 and 18<sup>th</sup>, 2004.

**Gooch, C.A.** 2004. Effective Handling of Sand-Laden Manure. PRO-DAIRY and College of Veterinary Medicine Fall Dairy Conference. Canandaigua Inn on the Lake, November 11 – 12, 2004.

**Gooch, C.A.** 2003. Flooring Considerations. Proceedings from the Building Freestall Barns and Milking Centers: Methods and Materials Conference, Camp Hill, PA, February 18-20, 2003. NRAES-148.

**Gooch, C.A.** 2003. Providing a Cow-Comfortable Environment. Proceedings from the Building Freestall Barns and Milking Centers: Methods and Materials Conference, Camp Hill, PA, February 18-20, 2003. NRAES-148.

Inglis, S.F. and **C.A. Gooch**. 2003. Insulation for Freestall Barns. Proceedings from the Building Freestall Barns and Milking Centers: Methods and Materials Conference, Camp Hill, PA, February 18-20, 2003. NRAES-148.

Ludington, D.L. and **C.A. Gooch**. 2003. Lighting Design and Installation Considerations. Proceedings from the Building Freestall Barns and Milking Centers: Methods and Materials Conference, Camp Hill, PA, February 18-20, 2003. NRAES-148.

**Gooch, C.A.** 2002. Sand for Bedding Dairy Cow Stalls. Proceedings from the 2002 McLanahan Sand-Laden Manure Handling Conference. Blair County Convention Center, Altoona, PA. November 15 and 16<sup>th</sup>, 2002.

**Gooch, C.A.** 2002. Considerations in Flooring – Updated. 2002 Hoof Health Conference Proceedings. Hoof Trimmers Association. June 27 – 29, 2002. Columbus, OH.

**Gooch, C.A.** 2001. New Concepts in Ventilation and Cow Comfort. 2000 – 2001 Cornell Winter Dairy Management Series Meetings.

Ciolkosz, D. and **C.A. Gooch**. 2001. Lighting System Considerations for Milking Centers. Proceedings from the Milking Systems and Parlors Conference, Camp Hill, PA, January 30 and 31 and February 1, 2001. NRAES-131.

**Gooch, C.A.** 2001. Environmental Control for Today’s Milking Center. Proceedings from the Milking Systems and Parlors Conference, Camp Hill, PA, January 30 and 31 and February 1, 2001. NRAES-131.

**Gooch, C.A.** 2000. Consideration in Flooring. Dairy Housing and Equipment Systems. Proceedings from the Dairy Housing and Equipment Systems: Managing and Planning for Profitability Conference, Camp Hill, PA, February 1 – 3, 2000. NRAES-129. pp. 278 - 293.

**Gooch, C.A.** and M.B. Timmons. 2000. Tunnel Ventilation for Freestall Barns. Dairy Housing and Equipment Systems. Proceedings from the Dairy Housing and Equipment Systems: Managing and Planning for Profitability Conference, Camp Hill, PA, February 1 – 3, 2000. NRAES-129. pp. 186 - 201.

**Gooch, C.A.** 1999. Newborn and Transitional Heifer Housing. Proceedings from the Professional Dairy Heifer Growers Northeast Regional Conference, Grantville, PA, November 2, 1999. pp. 1 – 17.

**Gooch, C.A.** 1999. Facility Design with Cow Comfort in Mind. Proceedings from the 1999 Western New York Dairy Congress, Delevan, NY, February 11, 1999. pp. 19 – 28.

**Gooch, C.A.** 1999. Cow Comfort and Farmstead Layout. Proceedings from the Northern Large Herd Management Conference, Chazy, NY, January 18, 1999 and Potsdam, NY, January 19, 1999. pp. 15 – 25.

**Gooch, C.A.** and H.L. Brodie. 1998. Dairy Manure Handling with Nutrient Management in Mind. Proceedings from the 1998 Central Research and Education Center Dairy Field Day, Clarksville, MD, July 14, 1998.

**Gooch, C.A.** 1995. A Producer's Guide to Construction Management. Designing a Modern Milking Center. Proceedings from the Designing a Modern Milking Center National Conference, Rochester, NY, November 29 – December 1, 1995. NRAES-73. pp. 100 - 117.

## **PUBLICATIONS – BOOK CHAPTERS**

Powers, W. B. Auvermann, N.A. Cole, **C.A. Gooch**, R. Grant, J. Hatfield, P. Hunt, K. Johnson, A. Leytem, W. Liao, J.M. Powell. 2014. Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods and Entity-Scale Inventory. Chapter 5, Quantifying Greenhouse Gas Sources and Sinks in Animal Production Systems. United States Department of Agriculture, Climate Change Program Office, Technical Bulletin 1939.

Mitloehner, F., J. Swearingen, **C.A. Gooch**, P.M. Ndewaga, and L. Jacobson. 2008. Guideline for the Care and Use of Agricultural Animals in Research and Teaching, 3<sup>rd</sup> edition. Chapter 3, Husbandry, Housing, and Biosecurity. Federation of Animal Science Societies. Champlain, IL

## **PUBLICATIONS – BOOKS**

Scott, N.R., J.L. Pronto, and **C.A. Gooch**. 2010. Biogas Casebook: NYS On-farm Anaerobic Digesters. Cornell PRO-DAIRY Program, Department of Biological and Environmental Engineering. Cornell University, Ithaca, New York.  
On-line at: [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

## **PUBLICATIONS – PROJECT REPORTS**

Mitloehner, Frank, Zhao, Yongjing, Pan, Yuee, Lin, Xing Jun, Hafner, Sasha, Gooch, Curt, Zhang, Mianfeng, and Weaver, Chris. 2015. *Research to Develop BACT for Combined Heat and Power Units Operated On Dairy Biogas*. California Energy Commission. Publication number: CEC-PIR-2010-053.

Labatut, R.A. and **C.A. Gooch**. 2014. Anaerobic Digestion System Monitoring for the Synergy Biogas, LLC Biogas Plant – Final Report. Cornell Agreement No. 65961. Available at: [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu).

Spirito, C.M, **C.A. Gooch** and L.T. Angenent. 2013. The Effect of Rumensin on the Stability of Manure-Based Anaerobic Digesters. Study Report for Elanco Animal Health (Study No. T1FUS100017).

Shelford, T.J. and **C.A. Gooch**. 2012. Small Farm Anaerobic Digestion Systems and Barriers to Increasing their Implementation in New York State. USDA Contribution Agreement No. 68-2C31-0-157/NYSERDA Project No. 20722. Available at: [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu).

**Gooch, C.A.**, J.L. Pronto, and R. Labatut. 2011. Evaluation of Seven On-Farm Anaerobic Digestion Systems Based on the ASERTTI Monitoring Protocol: Consolidated Report and Findings. NYSERDA Project Nos. 6597 and 9446. Available at: [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu).

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at Patterson Farms. NYSERDA Project No. 6597.

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at New Hope View Farm. NYSERDA Project No. 6597.

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at AA Dairy. NYSERDA Project No. 6597.

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at Noblehurst Farm. NYSERDA Project No. 6597.

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at Ridgeline Dairy. NYSERDA Project No. 6597.

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at Emerling Farm following the ASERTTI Protocol. NYSERDA Project No. 9446.

**Gooch, C.A.,** J.L. Pronto, and R. Labatut. 2011. Biogas Distribution Generation Systems Evaluation and Technology Transfer; Final Report for Anaerobic Digester System Monitoring at Sunny Knoll Farm following the ASERTTI Protocol. NYSERDA Project No. 9446.

**Gooch, C.A.,** J.L. Pronto, B. Gloy, N.R. Scott, S. McGlynn, and C. Bentley. 2010. “Feasibility Study of Anaerobic Digestion and Biogas Utilization Options for the Proposed Lewis County Community Digester”. Final project report submitted to Cornell Cooperative Extension of Lewis County. Available at: [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu).

**Gooch, C.A.,** S.F. Inglis, and P.E. Wright. 2007. Biogas Distributed Generation Systems Evaluation and Technology Transfer. NYSEDRDA Project No. 6597. Interim Report for May 2001 to May 2005. Available at: [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu).

**Gooch, C.A.,** S.F. Inglis, and A.W. Wedel. 2006. Feasibility of Anaerobic Digestion of Sand-Laden Dairy Manure. NYSERDA Project No. 7248. Final Report.

### **PUBLICATIONS – BRIEFING PAPER**

**Gooch, C.A.** and J.L. Pronto. 2009. Innovation Center for U.S. Dairy; Dairy Power Project – Briefing Paper written for the Dairy Power Summit October 29 and 30, 2009, Liverpool, New York.

### **PUBLICATIONS – COURSE MANUALS**

Pronto, J.L., and **C.A. Gooch**. 2012. Technical Feasibility of Farm-based Anaerobic Digesters.

Pronto, J.L., and **C.A. Gooch**. 2012. Implementation of Anaerobic Digester Systems from Planning and Design to Construction.

Pronto, J.L., **C.A. Gooch**, and N. Brown. 2012. Practical Considerations and Implementation of Anaerobic Digester Systems.

Pronto, J.L., and **C.A. Gooch**. 2012. Technician’s Start-up and Operation Guide.

Pronto, J.L., and **C.A. Gooch**. 2012. Biogas Clean-up and Utilization Systems.

### **PUBLICATIONS – LABORATORY MANUALS**

Labatut, R., and **C.A. Gooch**. 2012. PROTOCOL I: Manure-based anaerobic digestion operations

Labatut, R., and **C.A. Gooch**. 2012. PROTOCOL II: Manure-based, low-strength substrates co-digestion operations

Labatut, R., and **C.A. Gooch**. 2012. PROTOCOL IIIA: Manure-based, high-strength substrates co-digestion operations

Labatut, R., and **C.A. Gooch**. 2012. PROTOCOL IIIB: Pilot/bench-scale anaerobic digestion systems

## PUBLICATIONS – POPULAR PRESS

Wright, P.E. and **C.A. Gooch**. December, 2015. “Climate Change Will Impact Manure Management – What Farmers Should Prepare for.” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Steinberg, S., **C.A. Gooch**, and K.J. Czymmek. December, 2014. “Covered Manure Storage Systems: Tangible and Non-tangible Benefits.” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Czymmek, K.J, and **C.A. Gooch**. August, 2014. “Bunker Silo Safety.” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Czymmek, K.J, and **C.A. Gooch**. August, 2014. “OSHA’s Local Emphasis Program (LEP) for New York State Dairy Farms.” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Czymmek, K.J, **C.A. Gooch**, and N. Brown. April, 2014. “Respiratory Protection during Potential Hydrogen Sulfide Gas Exposure.” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Eskildsen, T., N. Glazier, **C.A. Gooch**, and K.J. Czymmek. April, 2014. “Gypsum use in dairy barns: what’s the big deal?” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** August, 2013. “What’s a producer to do now?” *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** July, 2013. “Concrete Floors for Dairy Cows”. *DairyBusiness East*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** February, 2012. “Anaerobic Digestion: Questions and Answers”. *BioCycle*. 63 S. Seventh Street, Emmaus, PA 18049.

**Gooch, C.A.** February, 2012. “What to Expect from the Got Manure – Integrated Manure Management Conference”. *Progressive Dairyman*.

**Gooch, C.A.** September, 2011. “Anaerobic Digestion: The Big Picture”. *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** August, 2011. “What’s a producer to do now?” *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** August, 2011. “EPA issues administrative reporting exemption for some farms”. *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and K.J. Czymmek. August, 2011. “Dairy air emissions update”. *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** K J. Czymmek, and F. Mitolehner. 2011. “Dairy Air Emissions: what you must know”. *Hoard’s Dairyman*. March 10, 2011. W.D., Hoard & Sons Company, Fort Atkinson, WI.

Shepherd, T., **C.A. Gooch**, K.J. Czymmek, and J. Karszes. May, 2009. “What’s your cost to cover manure storage?” *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Shepherd, T., **C.A. Gooch**, and K.J. Czymmek. May, 2009. “Put a lid on manure storage”. *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and T. Shepherd. 2009. “Manure Storage Covers – Q & A” May, 2009. *Eastern DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and D.F. McFarland. 2008. “Fan Cooling Dairy Cows” April, 2008. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** 2007. “Wide-Body Dairy Housing Barns”. September 2007. *Agricultural News*. Vol. 35, No. 9. Cornell Cooperative Extension, Saratoga County, NY 12020.

**Gooch, C.A.** and S.F. Inglis. 2007. “Squeezing out nutrients: How effective is it?” February, 2007. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** 2007. “Anaerobic digestion in the United States”. *Ag Nutrient Management*. Vol. 3, No.1. January 2007.

**Gooch, C.A.** 2007. “Wide-Body Dairy Barns”. *Hoard’s Dairyman*. January 25, 2007.

Aldrich, B.S. and **C.A. Gooch**. 2006. “Does your farm need a manure treatment system?” *Hoard’s Dairyman*. January 10, 2007.

**Gooch, C.A.**, P.E. Wright, and K. Czymmek. 2006. “Engineers in demand” September, 2006. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and P.E. Wright. 2006. “Make sure your manure storage is in compliance”. *Hoard’s Dairyman*. September, 2006

**Gooch, C.A.** 2006. “Status of biogas across the big pond”. April, 2006. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** 2006. “Fair construction contracting for all”. March, 2006. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.



**Gooch, C.A.** 2006. “What system provides the best environment for your cows?” February, 2006. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**C.A. Gooch**, J.S. Hogan, N. Glazier, and R. Noble. 2006. “Study compares types of organic bedding”. February, 2006. *Northeast DairyBusiness*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and P.E. Wright. 2005. “Do you have an undesigned manure storage?” October, 2005. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.**, S.F. Inglis, and D.L. Ludington. 2005. “Is the energy in manure worth harvesting?” June 2005 *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Aldrich, B.A. and **C.A. Gooch**. 2005. “Does your farm need a manure treatment system?” *Hoard’s Dairyman*. May, 2006.

**Gooch, C.A.**, K.J. Czymmek, and D.A. Crass. 2005. “What Should You Do About the EPA Consent Agreement?” *Hoard’s Dairyman*. March 25, 2005.

**Gooch, C.A.** and K.J. Czymmek. 2005. “EPA Air Quality Compliance Agreement and Final Order for AFOs: A Dairy Industry Executive Summary”. *CCE Agricultural News*. Vol. 33, No. 3. March 2005.

**Gooch, C.A.**, and K. Czymmek. 2005. “EPA air compliance agreement: should you participate?” February, 2005. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

Aldrich, B.S. and **C.A. Gooch**. 2005. “Manure management goes online.” February, 2005. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.**, K. Czymmek, P.E. Wright, L E. Chase. 2004. “Air emission law enforcement coming to dairy facilities: EPA consent agreement offered”. *One Step Head*. 2004.

Aldrich, B., **C. A. Gooch**, and P.E. Wright. “Latest on manure management” August, 2004. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** 2004. “What treatment systems are doable on your farm” August, 2004. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and K.J. Czymmek. “Clean air laws apply to dairy farms”. *Hoard’s Dairyman*. W.D. Hoards & Sons Co. Fort Atkinson, Wisconsin 53538, pg. 396. June 25, 2004.

**Gooch, C.A.** 2004. “Does your barn need tunnel ventilation?” June, 2004. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A., K. Czymmek, P.E. Wright, and L. Chase.** 2004. “EPA makes offer to monitor emissions” June, 2004. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** “Barn ventilation...the natural way”. *Hoard’s Dairyman*. W.D. Hoards & Sons Co. Fort Atkinson, Wisconsin 53538, pg. 358. May 25, 2004.

**Gooch, C.A.** 2004. “Air Emissions from Dairy Barns”. April, 2004. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** 2004. “Tunnel-Ventilated Barns; Point Source Emitters?” April, 2004. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and P. Wright. “Different sand = different manure handling”. September, 2003. *Midwest Dairy Business*. P.O. Box 608, Lowell, MA 01853-9970.

**Gooch, C.A.** and P. Wright. “Different sand = different manure handling”. September, 2003. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and W.C. Stone. “How comfortable are your dairy facilities?”. April, 2003. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and W.C. Stone. “How to track whether cows like stalls or not?”. April, 2003. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and W.C. Stone. “Improve cow performance and comfort with sound stall designs”. April, 2003. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and W.C. Stone. “What is cow comfort?” April, 2003. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** “Not all sand is the same”. September, 2002. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** “Turn the lights out on dry cows”. July, 2002. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145.

**Gooch, C.A.** and R.R. Stowell. “Airflow influences cow behavior: Cows search out spots in freestall housing where ventilation is better, research shows”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. June, 2002.

**Gooch, C.A.** and M.B. Timmons. “Technology takes heat stress into account”. May, 2002. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. June, 2002.

**Gooch, C.A.** “Want help designing tunnel ventilation?” *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May, 2002.

**Gooch, C.A.** “You can handle sand-laden manure”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. April, 2002.

**Gooch, C.A.** Site Planning Thoughts for Incremental Expansion. CCE Agricultural News. Vol. 30, No. 2. Feb. 2002

**Gooch, C.A.** “Heifer housing and management methods that makes sense” *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. December, 2001.

**Gooch, C.A.** “Tunnel Ventilation for Freestall Structures: is this an option that will work for you?”. *Agway Cooperator*. Winter 2001.

**Gooch, C.A.**, M.B. Timmons, and J. Karszes. “Economics of tunnel ventilation; Does tunnel ventilation pay in freestall barns?”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. August, 2001.

**Gooch, C.A.** “Getting the Floor Slope and Traction Right for Dairy Cows”. *The Progressive Dairyman*. July, 2001.

**Gooch, C.A.**, M.B. Timmons, and J. Karszes. “Will Tunnel Ventilation Cash-Flow in a Freestall Barn?”. *Hoard’s Dairyman*. W.D. Hoards & Sons Co. Fort Atkinson, Wisconsin 53538, pg. 450. July, 2001.

**Gooch, C.A.** “Appropriate Floor Slope and Extra Traction in Dairy Barns”. Hoof Trimmers Association Newsletter – Issue No. 28. S5572 Bluff Road, Baraboo, WI 53913. June, 2001.

**Gooch, C.A.** “How to Design Tunnel Ventilation in a Freestall Barn”. *Dairy Herd Management*. May, 2001.

**Gooch, C.A.** and M.B. Timmons. “Get Control of Cow Comfort: Time Integrated Value Environmental Control Technology Helps Improve Cows’ Environment”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. February, 2001.

**Gooch, C.A.** “Give Cows A Break From Concrete”. *Hoard’s Dairyman*. W.D. Hoards & Sons Co. Fort Atkinson, Wisconsin 53538, pg. W-14. January 25, 2001.

**Gooch, C.A.** “Give Cows A Break From Concrete”. *Hoard’s West*. 20567 Nathan Drive, Riverside, California 92508-2931, pg. W-14. January, 2001.

**Gooch, C.A.** “Expand With A Master Plan In Mind”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. December, 2000.

**Gooch, C.A.** “Give Cows A Break From Concrete”. Hoof Trimmers Association Newsletter – Issue No. 26. S5572 Bluff Road, Baraboo, WI 53913. December, 2000.

**Gooch, C.A.** “Finishing Concrete Floors”. *Hoard’s West*. 20567 Nathan Drive, Riverside, California 92508-2931, pg. W-142. November, 2000.

**Gooch, C.A.** “Adapting Cows to Life on Concrete”. *Hoard’s West*. 20567 Nathan Drive, Riverside, California 92508-2931, pg. W-116. September 25, 2000.

**Gooch, C.A.** “Finishing the Concrete Floor”. Hoof Trimmers Association Newsletter – Issue No. 25. S5572 Bluff Road, Baraboo, WI 53913. September, 2000.

**Gooch, C.A.** and A.W. Wedel. “Sand-Laden Dairy Manure, From Barn to Storage: Handling Is No Obstacle With Proper Design, Equipment and Management”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. September, 2000.

**Gooch, C.A.** and A.W. Wedel. “Handling Sand-Laden Dairy Manure from Barn to Storage: It’s No Obstacle with Proper Design, Equipment and Management”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. August, 2000.

**Gooch, C.A.** “Don’t Build - Renovate: Turn An Existing Facility Into A Good Environment For Heifers”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. July, 2000.

**Gooch, C.A.** “Adapting To Life on Concrete”. Hoof Trimmers Association Newsletter – Issue No. 24. S5572 Bluff Road, Baraboo, WI 53913. June, 2000.

**Gooch, C.A.** “Moving On Up: Proper Housing for the Adolescent Management Group Rounds Out Your Replacement Facilities”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May, 2000.

**Gooch, C.A.** “Out, Out Stale Air: A Well Ventilated Facility Contributes To Milk Quality”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May, 2000.

**Gooch, C.A.** “Off and Running: Keep Post-Weaned Calves Healthy and Growing Efficiently With Proper Housing”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. April, 2000.

**Gooch, C.A.** “Off To A Good Start: The Best Housing System Economically Meets All Calf Needs and Your Management Plan”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. March, 2000.

**Gooch, C.A.**, D.F. McFarland, and J.T. Tyson. “Cow Shelters Fit For the Future: Advances in Dairy Housing Components Are On the Horizon but Don’t Overlook Key Cow Comfort Items”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. November/December, 1999.

**Gooch, C.A.** “Sprinkle Away Heat Stress: Maintain Herd Health And Profit With Supplemental Cooling During Steamy Summer Days”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. July/August, 1999.

**Gooch, C.A.** “A Breath Of Fresh Air: Six Simple Principles Improve Natural Ventilation. The Result – Better Air Quality and Cow Performance in Dairy Shelters”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May/June, 1999.

**Gooch, C.A.** “Ask The Engineer”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May/June, 1999.

**Gooch, C.A.** “Buyer Be Aware: Before You Drive the First Nail on a New Facility, Get Answers To These Questions”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May/June, 1999.

**Gooch, C.A.** “Take The Heat Off: Tunnel Ventilation, Designed Properly, Can Relieve Summer Heat Stress”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May/June, 1999.

**Gooch, C.A.** and W.C. Stone. “Make A Better Bed: A Comfortable Cow Is A Productive Cow. To Get Both, Design, Build, and Maintain Freestalls Properly”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May/June, 1999.

**Gooch, C.A.** and W.C. Stone. “Sand or Mattresses...Make Them Work For You”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. May/June, 1999.

**Gooch, C.A.** “Select Storage For Surplus: Improper Storage of Surplus Silage Zaps Quality and It’s Unsafe”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. March/April, 1999.

**Gooch, C.A.** “Bunker Building Basics: A Well-Designed Forage Storage Starts With Proper Planning”. *Northeast Dairy Business*. P.O. Box 299, 5923 South Main Street, Sandy Creek, NY 13145. March/April, 1999.

## PUBLICATIONS – CASE STUDIES

Boerman, M., J.L. Pronto, and **C.A Gooch**. 2015. “Anaerobic Digestion at Lamb Farms”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Boerman, M., J.L. Pronto, and **C.A Gooch**. 2015. “Anaerobic Digestion at Zuber Farms”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Boerman, M., J.L. Pronto, and **C.A Gooch**. 2015. “Anaerobic Digestion at Swiss Valley Dairy”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Boerman, M., **Gooch, C.A.**, and J.L. Pronto. 2014. “Anaerobic Digestion at Lawnhurst Farms”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Boerman, M., **Gooch, C.A.**, and J.L. Pronto. 2013. “Anaerobic Digestion at Exeter Agri-Energy” [www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Shelford, T.J. and **C.A. Gooch**. 2012. “Manure handling at Fessenden Dairy”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Shelford, T.J., J.L. Pronto, and **C.A. Gooch**. 2012. “Anaerobic Digestion at Cayuga County Soil and Water Conservation District’s Community Digester” (Updated 2015)  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Labatut, R. and **C.A. Gooch**. 2012. “Anaerobic Digestion at Synergy Biogas, LLC”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Pronto, J.L. and **C.A. Gooch**. 2010. “Anaerobic Digestion at Noblehurst Farms”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2009. “Anaerobic Digestion at Roach Dairy Farm”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Pronto, J.L. and **C.A. Gooch**. 2008. “Anaerobic Digestion at Wagner Farms”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2009. “Anaerobic Digestion at Aurora Ridge Dairy”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2009. “Anaerobic Digestion at Sunny Side Dairy”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2008. “Anaerobic Digestion at AA Dairy”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Pronto, J.L. and **C.A. Gooch**. 2008. “Anaerobic Digestion at Ridgeline Dairy Farm”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Pronto, J.L. and **C.A. Gooch**. 2008. “Anaerobic Digestion at Sheland Farms”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2008. “Anaerobic Digestion at Twin Birch Farm”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Pronto, J.L. and **C.A. Gooch**. 2008. “Anaerobic Digestion at Sunny Knoll Farms, Inc.”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2008. “Anaerobic Digestion at Patterson Farms, Inc.”.  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**Gooch, C.A.** and J.L. Pronto. 2008. “Anaerobic Digestion at Emerling Farms, Inc.”.  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

Pronto, J.L. and **C.A. Gooch**. 2008. “Anaerobic Digestion at New Hope View Farm”  
[www.manuremanagement.cornell.edu](http://www.manuremanagement.cornell.edu)

**PUBLICATIONS – EXTENSION NEWS LETTERS, FACT SHEETS, WEB PAGE ARTICLES, AND OTHER**

Shepherd, T., **C.A. Gooch**, K.J. Czymmek, and J. Karszes. 2008. “Covers for Long-Term Dairy Manure Storages, Part 2: Estimating Your Farm’s Annual Cost and Benefit” Updated November 2015.

Shepherd, T., **C.A. Gooch**, K.J. Czymmek, and J. Karszes. 2008. “Covers for Long-Term Dairy Manure Storages, Part 1: Odor Control and More” Updated November 2015.

**Gooch, C.A.** P.E. Wright, and S. Steinberg. 2015. PRO-DAIRY e-Alert: “DAM/SWCC Climate Resilient Farming - Guidance”

**Gooch, C.A.** and K.J. Czymmek. 2015. PRO-DAIRY e-Alert: “Bunker Silo Safety Reminder from the OSHA Work Group”

**C.A. Gooch.** 2015. PRO-DAIRY e-Leader: “PRO-DAIRY project evaluates technical and economic feasibility of coupling dairy manure-based anaerobic digesters with commercial greenhouses”

**Gooch, C.A.** and K.J. Czymmek. 2015. PRO-DAIRY e-Alert: “Updated Dairy Farm Water Use Calculator Available from PRO-DAIRY”

**Gooch, C.A.** and S. Steinberg. 2014. “Barn Snow Removal – Do’s and Don’ts.

**Gooch, C.A.** and S. Steinberg. 2014. “Do’s and Don’ts of Barn Snow Removal”.

**Gooch, C.A.** 2014. “Heat Stress Relief for Northeast Dairy Cows; You Can’t Afford Not to Do It!”

**C.A. Gooch**, K.J. Czymmek, and F. Mitloehner. 2014. “Animal Agriculture Air Emissions – Dairy Industry Update 2014”.

Czymmek, K.J. and **C.A. Gooch.** 2014. PRO-DAIRY e-Alert: “Important: OSHA Inspection Update for Dairy Producers”

Czymmek, K.J. and **C.A. Gooch.** 2014. PRO-DAIRY e-Alert: “OSHA LEP Update”

Eskildsen, T., N. Glazier, **C.A. Gooch** and K.J. Czymmek. 2013. PRO-DAIRY e-Alert: “Gypsum Bedding in Bedded Pack Barns May *Also* Create Dangerous Conditions.”

Eskildsen, T., N. Glazier, **C.A. Gooch** and K.J. Czymmek. 2013. PRO-DAIRY e-Alert: “Gypsum Bedding in Long-Term Manure Storage May Create Dangerous Conditions.”



**Gooch, C.A.** and K.J. Czymmek. 2013. PRO-DAIRY e-Alert: “OSHA Plans to Target New York State Dairy Farms with Random Unannounced Inspections in 2014.”

**Gooch, C.A.** 2013. “Flooring Considerations for Dairy Cows”. PRO-DAIRY Dairy Facilities Web Site.

**Gooch, C.A.** 2013. “Ventilation Intervention Questionnaire for Pre-weaned Calf Barns” New York City Watershed – Watershed Agricultural Council.

**Gooch, C.A.** 2013. “State Public Commission Authorizes Increased Funding for Digesters; funds available per digester project doubles to \$2 Million.” PRO-DAIRY Special Alert. Cornell University.

**Gooch, C.A.**, and K.J. Czymmek. 2013. “Water use Reporting Required for New York State Dairy Farms that Use Large Quantities of Water.” PRO-DAIRY e-leader. Cornell University.

**Gooch, C.A.** 2013. “Digester Grants Available.” PRO-DAIRY e-leader. Cornell University.

Czymmek, K.J., **C.A. Gooch**, and S.L. Telega. 2012. PRO-DAIRY Alert: Water use reporting required for New York State dairy farms that use large quantities of water.

**C.A. Gooch**, and D. F. McFarland. 2011. “Fan Cooling Dairy Cows: Q and A.”

**C.A. Gooch**, K.J. Czymmek, and F. Mitloehner. 2011. “Air Emissions Monitoring Study Results.” One Step Ahead. Northeast Dairy Producers Association.

**C.A. Gooch**, and K.J. Czymmek. 2011. “Animal Agriculture Air Emissions – Dairy Industry Update”.

**C.A. Gooch**. 2011. “Heat Abatement in an Unpredictable Climate.”

Pronto, J.L. and **Gooch, C.A.** 2009. “Greenhouse Gas (ghg) Emission Reductions Due to Anaerobic Digestion of Dairy Manure.

Pronto, J.L. and **Gooch, C.A.** 2009. “Increase in RPS Funding for New York State Anaerobic Digesters Proposed.” *Biogas News*. Forth Edition. Cornell Manure Management Program.

**Gooch, C.A.** and J.L. Pronto. 2009. “Past, Present, and Projected Statistics for New York State On-Farm Anaerobic Digestion. *Biogas News*. Forth Edition. Cornell Manure Management Program.

**Gooch, C.A.** and J.L. Pronto. 2009. “Select Resources for New and Existing Digester Operators”. *Biogas News*. Forth Edition. Cornell Manure Management Program.

Pronto, J.L. and **Gooch, C.A.** 2009. “Standard Interconnection Requirements from the Public Service Commission; A must-read for all New York State dairy producers considering anaerobic digestion.” *Biogas News*. Forth Edition. Cornell Manure Management Program.

Pronto, J.L. and **Gooch, C.A.** 2009. “Digester Monitoring Update.” *Biogas News*. Forth Edition. Cornell Manure Management Program.

**Gooch, C.A.** 2009. “On-Farm Anaerobic Digester Construction Contracting & Management 101.

Czymmek, K.J. and **C.A. Gooch**. 2009. Northeast Dairy Producers Association (NEDPA) 2009 Annual Meeting. “NEDPA Environmental Update”

**Gooch, C.A.** and J.L. Pronto. 2009. “On-Farm Anaerobic Digestion: Linking Agriculture, Community and Industry Toward a Sustainable Future.” *Biogas News*. Third Edition. Cornell Manure Management Program.

**Gooch, C.A.** and K.J. Czymmek. 2009. “How to Submit an EPCRA Continuous Release Report for Large CAFO Farms That Have Not Signed the 2005 EPA Air Emissions Compliance Agreement.”

**Gooch, C.A.** and K.J. Czymmek. 2009. “Dairy Ammonia Loss Estimation Worksheet”

Shepherd, T., **C.A. Gooch**, and K.J. Czymmek. 2008. “Covers for Long-Term Dairy Manure Storages, Part 1: Odor Control and More”

Shepherd, T., **C.A. Gooch**, K.J. Czymmek, and J. Karszes. 2008. “Covers for Long-Term Dairy Manure Storages, Part 2: Estimating Your Farm’s Annual Cost and Benefit”

**Gooch, C.A.** 2008. “Cow Comfort and Well-Being”

**Gooch, C.A.** 2008. “Twin Birch Dairy” *Biogas News*. Premier Issue. Cornell Manure Management Program.

**Gooch, C.A.** 2006. “Wide-body Dairy Housing Barns.”

**Gooch, C.A.** and S.F. Inglis. 2006. “Patterson Farms, Inc. Case Study”.

**Gooch, C.A.** and A. Van Blarcom. 2006. Feasibility Studies of Dairy Waste Treatment Systems.

**Gooch, C.A.** and B.S. Aldrich. 2005. “Choosing a Manure Treatment System: Questions to Ask.” Cornell Cooperative Extension *Agricultural News*. Vol. 33, No. 10. pp. 25-26

**Gooch, C.A.** and P.E. Wright. 2005. “Is Your Manure Storage Up to Snuff?”

**Gooch, C.A.** and B.S. Aldrich. 2005. “Choosing a Manure Treatment System: Questions to Ask”

Czymmek, K.J. and **C.A. Gooch**. 2005. “The EPA Air Emissions Compliance Agreement for Animal Feeding Operations: Why should dairy producers pay attention?” Cornell Cooperative Extension *Agricultural News*. April, 2005.

Aldrich, B.S. and **Gooch, C.A.** 2005. “Evaluating the Need for a Manure Treatment System”

Czymmek, K.J. and **C.A. Gooch**. 2005. “NRCS NY313 Waste Storage Facility Standard”

**Gooch, C.A.** and P.E. Wright. 2005. “Time is Running Out for Un-designed Manure Storages”

Vokey, F., and **C.A. Gooch**. 2005. EPA Deadline on Air Quality Now Expired – Now What? Lewis County Ag Digest. August Issue.

**Gooch, C.A.** 2005. Cow Comfort Basics.

Czymmek, K.J. and **C.A. Gooch**. 2005. The EPA Emission Compliance Agreement for Animal Feeding Operations: Why should dairy producers pay attention?

**Gooch, C.A.** and K.J. Czymmek. 2005. EPA Air Emission Compliance Agreement – Dairy Industry Executive Summary.

**Gooch, C.A.**, K.J. Czymmek, P.E. Wright, and L. Chase. 2004. “Air Emission Law Enforcement Coming to Dairy Facilities: EPA “Safe Harbor” Consent Agreement Offered”.

**Gooch, C.A.** 2004. Effective Natural Ventilation for New Smaller Freestall Barns. Cornell Small Farm Quarterly.

**Gooch, C.A.** 2003. Effective Natural Ventilation Strategies.

**Gooch, C.A.** and M.B. Timmons. 2002. Cow-Cooling System Controllers. Cornell Cooperative Extension *Agricultural News*. Vol. 30, No. 7. pp. 18

**Gooch, C.A.** and M.B. Timmons. Application of Time Integrated Value (TIV) Environmental Control Technology to Dairy Barns. May, 2002

**Gooch, C.A.** Interactive Web Site for Designing Tunnel-Ventilated Dairy Barns. May, 2002.

**Gooch, C.A.** Site Planning Thoughts for Incremental Expansion. June, 2001.

**Gooch, C.A.** “Existing Facilities for Replacement Housing – 4<sup>th</sup> in a Series”. May, 2001. Cornell Cooperative Extension *Agricultural News*. Vol. 29, No. 5. pp. 12-13.

**Gooch, C.A.** “Fundamentals of Cow Comfort and Well Being. May, 2001.

**Gooch, C.A.** and M.B. Timmons. Time Integrated Value Environmental Control Technology: Step Up to the Times. May, 2001.

**Gooch, C.A.** “Adolescent Heifer Housing – 3<sup>rd</sup> in a Series”. November, 2000. Cornell Cooperative Extension *Agricultural News*. Vol. 29, No. 4. pp. 6-8.

**Gooch, C.A.** “Construction Dairy Facilities: Tips for producers as they look for and work with a contractor”. August, 2000.

**Gooch, C.A.** “Newborn Housing for Dairy Calves - 1st in a Series”. August, 2000. Cornell Cooperative Extension *Agricultural News*.

**Gooch, C.A.** “Transition Housing for Heifers - 2<sup>nd</sup> in a Series”. August, 2000. Cornell Cooperative Extension *Agricultural News*. Vol. 28, No. 11. pp. 12-13.

**Gooch, C. A.** “Supplemental Cooling to Provide Heat Stress Relief For Northeast Dairy Cows – You Can’t Afford Not To Do It! *Total Dairy Nutrition*. Vol. 2, No. 7. July, 2000.

**Gooch, C.A.** and A.W. Wedel. “Handling Sand-Laden Dairy Manure from Barn to Storage”. July, 2000.

**Gooch, C.A.** and W.C. Stone. “Modern Freestall Design and Management”. July, 2000.

**Gooch, C.A.** “Fan Cooling of Dairy Cows”. June, 2000.

**Gooch, C.A.** “Air Out Your Milking Facility: A Well-Ventilated Facility Contributes to Milk Quality.” May, 2000.

**Gooch, C.A.** 2000. “Facility Design with Cow Comfort in Mind”. February, 2000. Cornell Cooperative Extension *Agricultural News*. Volume 28, No. 2. and August, 2001. Cooperative Extension *Agricultural News*. Vol. 29, No. 8.

**Gooch, C.A.** “Heavy Snow Loads”. *Country Folks of Pennsylvania*. December 6, 1999.

**Gooch, C.A.** “Fresh Air Improves Production: Manage Barn Curtain Walls During Fall and Winter Conditions”. November, 1998.

**PROGRAM SUMMARY LIST - 2015**

02/05/2015 Ithaca, NY. PRO-DAIRY - Milk Quality webinar program. “Impact of Facilities on Milk Quality”. 25 attended.

02/18, 20, and 2/23/2015 Ithaca, NY. Animal Science 3510 class. Guest Lecturer. 35 students.

02/26/2015 Ithaca, NY. PRO-DAIRY - Dairy Calf webinar program. “Dairy Calf Facilities”. 60 attended.

03/24/2015 Penn Yann, NY. Yates Soil and Water Conservation District -“Manure Gases and Gypsum Bedding”. 22 attended.

04/29/2015 Ithaca, NY. VTMED 6430 class. Guest Lecturer. 12 students.

05/19/2015 Ithaca, NY. VM 6610 – Herd Health and Biosecurity Risk Evaluation Using the NYS Cattle Health Assurance Program (NYSCHAP) Model. Guest Lecturer. “Dairy Facilities” 9 students.

06/29/2015 Ithaca, NY. Summer Dairy Institute. Invited Speaker. “Dairy Farm Manure Management”. 34 attended.

7/08/2015 Syracuse, NY. New York Cheese Manufactures Summer Meeting. “On-farm Anaerobic Digestion in New York State”. 13 attended.

10/30/2015 York, NY. DFA Dairy Farm Digester Tour and Discussions. “Anaerobic digestion in NYS – an Update” 11 attended.

## **PROGRAM SUMMARY LIST – 2014**

02/19, 21, 24, 28, 4/30, 5/2, and 5/5/2014 Ithaca, NY. Animal Science 3510 class. Guest Lecturer. 10 students.

03/05/2014 Geneva, NY. PRO-DAIRY Winter Dairy Management Meetings. “Budgeting for a Dairy Modernization” and “Low Cost Milking Parlors”. 22 attended.

03/05/2014 Castile, NY. NYS OSHA Workgroup – On-farm discussion and walkthrough with NYS DOL officials and host farm employees. 11 attended.

05/12/2014 Ithaca, NY. VTMED 6430 class. Guest Lecturer. 8 students.

05/13/2014 Syracuse, NY. NYSCHAP staff meeting. Invited Speaker. Group Housed/Group Fed Calf Facilities. 13 attended.

05/20/2014 Ithaca, NY. VM 6610 – Herd Health and Biosecurity Risk Evaluation Using the NYS Cattle Health Assurance Program (NYSCHAP) Model. Guest Lecturer. 11 students.

07/15/2014 Ithaca, NY. Summer Dairy Institute. Invited Speaker. “Group Housed/Group Fed Calf Facilities” and “Dairy Farm Manure Management”. 37 attended.

08/14/2014 Ithaca, NY. Pre-Empire Farm Show Dairy Tour. “Cow Position Assessment for Cornell T&R Center “Before” and “After”. 56 attended.

10/30/2014 Ithaca, NY. PRO-DAIRY Fall Dairy Calf Program. “Dairy Calf Facilities”. Video Conference. 60 attended.

11/11 and 11/13/2014 Ithaca, NY. Animal Science 3540 class. Guest Lecturer. 24 students.

12/4/2014 Owasco, NY. OSHA Dairy Facility Training Session. 16 attended.

### **PROGRAM SUMMARY LIST - 2013**

01/17/2013 Rochester, NY. PRO-DAIRY Operations Managers Conference. “Cow Comfort Assessment Tools”. 85 attended.

01/24/2013 Walton, NY. New York City Watershed Agricultural Program. On-farm discussion on calf barn ventilation and health. 7 attended.

02/25/2013 Ithaca, NY. Cornell PRO-DAIRY/NYS Department of Environmental Conservation Webinar. “Dairy Water Use Calculator: Unveiling, Demonstration, and DEC Reporting Requirements”. 56 participated.

02/26/2013 Middletown, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 15 attended.

02/27/2013 Saratoga Springs, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 36 attended.

03/06/2013 Carthage, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 27 attended.

03/07/2013 Malone, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 34 attended.

03/15/2013 Baldwinsville, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 16 attended.

03/19/2013 Falconer, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 35 attended.

03/20/2013 Mt. Morris, NY. Cornell PRO-DAIRY Winter Dairy Management series. “Optimizing Cow Comfort Throughout the Barn: A Rebalance for Resiliency” 38 attended.

03/4, 8, 11, 4/8, 10, and 22/2014 Ithaca, NY AN SCI 3510 class. Guest Lecturer. 45 students.

05/01/2013 Ithaca, NY. VTMED 6430 class. Guest Lecturer. 20 students.

05/20/2013 Ithaca, NY. VM 6610 – Herd Health and Biosecurity Risk Evaluation Using the NYS Cattle Health Assurance Program (NYSCHAP) Model. Guest Lecturer. 12 students.

05/30/2013 Castile, NY. Table Rock Farm – Night Shift Employee Meeting Guest Speaker. “Cow Stall Use Assessments” 13 attended.

07/26/2013 Cayuga County, NY. NYSDEC CAFO Program Director In-Service day. 3 attended.

08/06/2013 Penn Yan, NY. PRO-DAIRY/WNYDLF Team Small Scale Anaerobic Digester Workshop. “Nuts and Bolts of Anaerobic Digestion” and Discussion Panel Moderator. 62 attended.

08/06/2013 Geneva, NY. PRO-DAIRY Robotic Milking Discussion Group meeting. “Cow lying time assessments for RMS herds – recent results”. 13 attended.

08/20/2013 Rochester, NY. PRO-DAIRY Dairy Acceleration Program. “Dairy cow facilities – walk thru discussion”. 11 attended.

08/22/2013 Ithaca, NY. PRO-DAIRY Dairy Farm Business Analysis Workshop. “Facilities Assessment”. 13 attended.

09/13/2013 Albany, NY. PRO-DAIRY NY/VT Anaerobic Digester Update Meeting. “Dairy derived biogas clean-up options and costs” 24 attended.

10/01/2013 Ithaca, NY. AN SCI Heard Health Class. Guest Lecturer. 20 students.

10/03/2013 Canandaigua, NY. Ontario County Young Dairy Managers discussion group – monthly meeting. Dairy Facilities Discussion. 13 attended.

10/29/2013 Albany, NY PRO-DAIRY Dairy Environmental Systems meeting – Impacts of Climate Change Predictions on NY Dairy Industry “Heat Stress Abatement in Dairy Animals”. 26 attended.



## PROGRAM SUMMARY LIST - 2012

01/30-31/2012 Auburn, NY. Anaerobic Digester Workforce Development Series Meetings. “Section 5: Relative Regulations for On-Farm Anaerobic Digestion” and “Feasibility Parameters and Farm Considerations”. 12 attended.

02/22/2012 Richfield Springs, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 60 attended.

02/22/2012 Oneonta, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 45 attended.

02/29/2012 Hornell, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 33 attended.

03/01/2012 Mt. Morris, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 45 attended

03/02/2012 Randolph, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 45 attended

03/13/2012 Cortland, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 43 attended

03/21/2012 Carthage, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 23 attended

03/22/2012 Chezy, NY. Winter Dairy Management Series Meetings. “Pre-weaned Group Calf Housing Design and Management”. 48 attended

04/2, 4, 6, 20, 25, 27, and 30/2012 Ithaca, NY. AN SCI 351 class. Guest Lecturer. 50 students.

05/2/2012 Ithaca, NY. VT MED 6430 class. Guest Lecturer. 20 students.

01/30-31/2012 Scipio Center, NY. Anaerobic Digester Workforce Development Project; ROS 1c: Practical Considerations and Implementation of Anaerobic Digestion Systems from Planning and Design to Construction Short Course. “Planning for an Anaerobic Digester.” 5 attended.

08/28/2012 Falconer, NY. PRO-DAIRY *Dairy Fast* Meeting. “Cow-Comfort: An Overview of All Components”. 11 attended

08/29/2012 Warsaw, NY. PRO-DAIRY *Dairy Fast* Meeting. “Cow-Comfort: An Overview of All Components”. 8 attended

09/04/2012 Owasco, NY. PRO-DAIRY *Dairy Fast Meeting*. “Cow-Comfort: An Overview of All Components”. 22 attended

09/11/2012 Richfield Springs, NY. PRO-DAIRY *Dairy Fast Meeting*. “Cow-Comfort: An Overview of All Components”. 8 attended

10/20/2012 Owasco, NY. Anaerobic Digester Workforce Development Project; ROS 1e: Biogas Clean-up and Utilization Systems Selection, Operation, and Maintenance short-course. “Biogas Clean-up Options.” 20 attended.

11/01/2012 Ithaca, NY. Anaerobic Digestion Workforce Development Project; ROS 1a: Technical Feasibility of on-Farm Anaerobic Digestion short-course. Open Discussion Leader. 4 attended.

12/06-12/07/2012 Perry, NY. Anaerobic Digester Workforce Development Project; ROS 1c: Practical Considerations and Implementation of Anaerobic Digestion Systems from Planning and Design to Construction Short Course. “Planning for an Anaerobic Digester.” 21 attended.

12/13/2012 Syracuse, NY. PRO-DAIRY Group Housed Calves Conference. “Demko Farm calf barn design.” 250 attended.

## **PROGRAM SUMMARY LIST - 2011**

02/01/2011 Batavia, NY. Winter Dairy Management Series Meetings. “Heat Stress Relief” 26 attended.

02/08/2011 Carthage, NY. Winter Dairy Management Series Meetings. “Heat Stress Relief” 32 attended.

02/09/2011 Saratoga Springs, NY. Winter Dairy Management Series Meetings. Winter Dairy Management Series Meetings. “Heat Stress Relief” 27 attended.

02/16/2011 Auburn, NY. (polycom conf.) Winter Dairy Management Series Meetings. Winter Dairy Management Series Meetings. “Heat Stress Relief” 27 attended.

04/13, 15, 25, 27, 29 and 5/2/2011 Ithaca, NY. AN SCI 351 class. Guest Lecturer. 45 students.

05/23/2011 Ithaca, NY. VM 6610 – Herd Health and Biosecurity Risk Evaluation Using the NYS Cattle Health Assurance Program (NYSCHAP) Model. Guest Lecturer. 12 students.

06/21-23/2011 Ithaca, NY. PRO-DAIRY Professional Engineer Workshop Series; Post-Frame Building and Functional Review. Evaluation of Engineering Designs – What to look for. 33 attended.

07/10/2011 Waterloo, NY. PRO-DAIRY Dairy Profit Seminar Series; Cow Comfort and Well-Being Panel – add hock member. 55 attended.

11/14/2011 Genoa and Dryden, NY. Cornell Cooperative Extension Annual In-Service training meeting. “On-farm aspects to assessing cow comfort”. 16 attended.

11/30/2011 Syracuse, NY. PRO-DAIRY Group-Housed Calf Systems Symposium. “A Novel Approach to Ventilating Group-Housed Calf Facilities”. 65 attended. (presented by Chris Rossiter on my behalf.)

12/02/2011 Poestenkill, NY. PRO-DAIRTY New York State Legislator training session: “On-Farm Anaerobic Digestion- An Overview”. 18 attended.

12/19/2011 Ithaca, NY. PRO-DAIRY Professional Engineer Workshop Series; Winter 2011 Session: “Sand-Laden Dairy Manure: Gathering, Handling, Conveyance, and Storage. 42 attended.

## **PROGRAM SUMMARY LIST - 2010**

04/13/2010 Ithaca, NY. Vet Med 6430 class. Guest Lecturer. 20 students.

04/19, 21, 26, 30 and 5/3/2010 Ithaca, NY AN SCI 351 class. Guest Lecturer. 50 students.

05/24/2010 Ithaca, NY. New York State Cattle Health Assurance Program (NYSCHAP) meeting. “Dairy Farm Environmental Management Systems”. 21 attended.

06/29/2010 Venice, NY. Northeast Branch of Crop, Soil, and Agronomy Societies of America, 2010 Annual Meeting. “Overview of Dairy Manure-Based Anaerobic Digestion”. 41 attended.

06/30/2010 Ithaca, NY. Northeast Branch of Crop, Soil, and Agronomy Societies of America, 2010 Annual Meeting. “Energy Crop Anaerobic Digestion”. 35 attended.

08/09/2010 Pavilion, NY. PRO-DAIRY Western New York Manure Systems Tour. “Anaerobic Digestion – Past, Present, and Future” and “Sand Lane Management – Recovering Sand Successfully”.

10/28/2010 Venice, NY. Introduction to Agricultural Machinery (Ag Sci 2940) class field trip to Sunny Side Dairy. “Overview of on-farm anaerobic digestion and discussion of the Sunny Side anaerobic digester system.” 17 attended.

11/02/2010 Varysburg, NY. PRO-DAIRY Anaerobic Digester Safety Training. 9 attended.

11/04/2010 Venice Center, NY. PRO-DAIRY Anaerobic Digester Safety Training. 22 attended.

11/18/2010 Ithaca, NY. Cornell Cooperative Extension Annual In-service Meeting. “Animal Welfare”. 9 attended.

## PROGRAM SUMMARY LIST - 2009

01/22/2009 Norwich, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning” and “Your First Freestall Barn” 10 attended.

01/21/2009 Richfield Springs, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning” and “Your First Freestall Barn” 11 attended.

01/27/2009 Saratoga Springs, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning”, “Your First Freestall Barn”, and “Improving Your Existing Freestall Barn”. 15 attended.

02/05/2009 Varysburg, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning”, “Your First Freestall Barn”, and “Improving Your Existing Freestall Barn”. 44 attended.

02/06/2009 Randolph, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning” and “Your First Freestall Barn” 52 attended.

02/13/2009 Morrisville, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning” and “Your First Freestall Barn” 23 attended.

02/18/2009 Cortlandville, NY. Winter Dairy Management Series Meetings. “Your First Freestall Barn”. 15 attended.

02/19/2009 Cohocton, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning” and “Your First Freestall Barn”. 36 attended.

03/04/2009 Cortlandville, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning”. 12 attended.

02/19/2009 Genesee, NY. Winter Dairy Management Series Meetings. “Farmstead Master Planning” and “Your First Freestall Barn”. 16 attended.

03/12/2009 Attica, NY. Wyoming Co. dairy producer discussion group – monthly meeting. Lead discussions on: Air Emissions and Manure Management. 17 attended.

04/06/2009 Morrisville, NY. SUNY-Morrisville dairy science class guest lecture. “Natural Ventilation of Freestall Barns” and “Mechanical Ventilation of Freestall Barns”. 22 attended.

04/07/2009 Morrisville, NY. Cornell Veterinary School VTMED-740 class guest lecturer. “Engineered Manure Treatment Systems”. 12 attended.

05/20/2009 Ithaca, NY. Cornell Veterinary School VMED 6610 – Herd Health and Biosecurity Risk Evaluation Using the NYS Cattle Health Assurance Program (NYSCHAP) Mode guest lecturer. “Dairy Housing Overview” and “Agricultural Air Emissions.

11/10/2009 Ithaca, NY. Cornell Cooperative Extension – Annual In-service Meeting. “Dairy Power Project – US Center for Dairy”. 17 attended.

11/12/2009 Venice, NY. Northeast Dairy Producers Association – Fall Manure Tour. Digester Owner/Operator Panel Moderator. 81 attended.

12/10/2009 Waterloo, NY. Cornell Certified Crop Association annual in-service training. “U.S. Center for Dairy Innovation”. 31 attended.

## PROGRAM SUMMARY LIST - 2008

- 01/21/2008 Richfield Springs, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 26 attended.
- 01/22/2008 Saratoga, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 32 attended.
- 01/23/2008 Randolph, VT. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 74 attended.
- 01/28/2008 Seneca Falls, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 32 attended.
- 01/29/2008 Batavia, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 45 attended.
- 01/30/2008 Pike, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 60 attended.
- 01/29/2008 Randolph, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 75 attended.
- 02/15/2008 Painted Post, NY. Winter Dairy Management Series Meetings. “Facilities for Replacements.” 31 attended.
- 03/07/2008 Phelps, NY. Dairy Farm Odor Control: What's Known and Where We Need to Go From Here? “Manure Storage Covers and Biogas Handling”. 36 attended.
- 03/24/2008 Canton, NY. Successful Dairy Modernization: *Plan, Implement, and Reap the Benefits*. “Developing a Farmstead Master Plan” and “Strategies for Housing, Feeding, and Manure Management”. 17 attended.
- 03/25/2008 Carthage, NY. Successful Dairy Modernization: *Plan, Implement, and Reap the Benefits*. “Developing a Farmstead Master Plan” and “Strategies for Housing, Feeding, and Manure Management”. 31 attended.
- 03/31/2008 Chazy, NY. Spring 2008 Manure/Nutrient Management/Renewable Energy Workshop. “Cover Options for Manure Storages” and “Anaerobic Digestion”. 36 attended.
- 03/31/2008 Schoharie, NY. Spring 2008 Manure/Nutrient Management/Renewable Energy Workshop. “Cover Options for Manure Storages” and “Anaerobic Digestion”. 41 attended.
- 04/9/2008 Ithaca, NY. Veterinary Perspectives on Pathogen Control in Animal Manure, VTMED 740, guest lecture. “Manure Treatment Systems for Dairy Farms”. 14 attended.

10/22/2008 Mexico, NY. Cornell Cooperative Extension of Oswego County Renewable Technologies for On-Farm Energy Generation Workshop. “Methane Digestion for Small Farm Operations”. 23 attended.

11/10/2008 Ithaca, NY. Cornell PRO-DAIRY Program. “Dairy Facilities for the Northeast US”. 14 attended.

12/03/2008 Auburn, NY. Cornell PRO-DAIRY Fall 2008 Manure/Nutrient/Renewable Energy Workshop. “Anaerobic Digestion” and “Manure Storage Covers”. 41 attended.

12/11/2008 Waterloo, NY. Cornell PRO-DAIRY Fall 2008 Professional Engineer Continuing Education Series. “Anaerobic Digestion in NYS – An Update”. 19 attended.

12/11/2008 Waterloo, NY. Cornell PRO-DAIRY Fall 2008 Certified Crop Advisor and Professional Engineer Continuing Education Series joint session. “Cows not outside!” 70 attended.

12/16/2008 Batavia, NY. Cornell PRO-DAIRY Fall 2008 Manure/Nutrient/Renewable Energy Workshop. “Anaerobic Digestion”. 28 attended.



## **PROGRAM SUMMARY LIST - 2007**

02/28/2007 Syracuse, NY. Northeast Dairy Producers Association – Annual Meeting. “Air emissions update.” 200 attended.

02/28/2007 Fabius, NY. Dairy Support Services Company, Venture Farms, Cornell Cooperative Extension, and the CNY Regional Planning & Development Board. “Digester basics, history, and sampling of different types of installations”. 34 attended.

03/20/2007 Oriskany, NY. 2007 Carbon Credit Road Show. “Basics of manure storage covers, metering and flaring biogas”. 18 attended.

03/26/2007 Batavia, NY. 2007 Carbon Credit Road Show. “Basics of manure storage covers, metering and flaring biogas”. 26 attended.

03/28/2007 Waterloo, NY 2007 Carbon Credit Road Show. “Basics of manure storage covers, metering and flaring biogas”. 17 attended.

04/06/2007 Auburn, NY 2007 Carbon Credit Road Show. “Basics of manure storage covers, metering and flaring biogas”. 17 attended.

04/16/2007 Watertown, NY 2007 Carbon Credit Road Show. “Basics of manure storage covers, metering and flaring biogas”. 29 attended.

08/15/2007 West Chazy, NY. Dairy Nutrition 2007 Short Course. “Dairy Facilities – What’s New?”, “Water Quality and Availability”, and “Miner Institute Dairy Facility Evaluation”. 62 attended.

08/21/2007 Ithaca, NY. PRO-DAIRY Post-Frame Building & Structural Roof Design Workshop for Engineers. “New York State Post-Frame Failure Investigation” and “Evaluation of Engineering Designs; What to Look For” 27 attended.

11/14/2007 Ithaca, NY. Cornell Cooperative Extension 2008 In-service. “Air Emissions – Update” and “Synopsis of Anaerobic Digester Monitoring in NY State” 26 attended.

## **PROGRAM SUMMARY LIST - 2006**

01/19/2006 Lowville, NY. Cornell Cooperative Extension. “Ventilation Strategies for Tie Stall Barns” 45 attended.

01/19/2006 Watertown, NY. Cornell Cooperative Extension. “Ventilation Strategies for Tie Stall Barns” 32 attended.

02/2/2006 Ithaca, NY. PRO-DAIRY. “Big-5 Anaerobic Digestion Monitoring Project Interim Results” 33 attended.

02/21/2006 New Berlin, NY. Cornell Cooperative Extension: Non-Nutritional Reasons Dairy Cows Don’t Perform. “Stall design & Floor surfaces for tie stall and freestall barns” and “Ventilation and Cow Cooling”. 55 attended.

02/28/2006 Auburn, NY. Agricultural Consulting Services: Dairy Manure Management Program. “Use of post-digested separated solids for freestall bedding”, “Update on anaerobic digestion in New York State”, and “Performance of solid-liquid separators”. 42 attended.

03/21/2006 Cortland, NY. CAFO Update Program. “Is your manure storage up to snuff?” 94 attended.

03/24/2006 Richfield Springs, NY. CAFO Update Program. “Is your manure storage up to snuff?” 63 attended.

03/29/2006 Syracuse, NY. NYSERDA 6<sup>th</sup> Annual Innovations in Ag. Program. “Monitoring Results for Five NY Farm Anaerobic Digesters” and “NY Farm Digester Operators Panel - Moderator”. 150 attended.

03/29/2006 Syracuse, NY. NYSERDA 6<sup>th</sup> Annual Innovations in Ag. Program. “Digested Solids for Bedding”, “Manure Storage Design Considerations”, and “Emerging Air Emissions Issues”. 150 registered.

03/06/2006 Mechanicville, NY. CAFO Update Program. “Is your manure storage up to snuff?”. 55 attended.

07/18/2006 New Berlin, NY. Alternative Energy Workshop – Opportunities for Farmers and Landowners. “Update on Digesters” 31 attended.

08/14-15/2006 Oriskany, NY. Un-designed manure storage evaluation program. “Overview of the issue”. 11 attended.

08/16-17/2006 Batavia, NY. Un-designed manure storage evaluation program. “Overview of the issue”. 12 attended.

## PROGRAM SUMMARY LIST - 2005

01/05/2005 Cobleskill, NY. Cobleskill Dairy Day Program. “Handling Sand-Laden Dairy Manure from Stall to Storage.” ~45 attended.

01/14/2005 Delhi, NY. New York Watershed Program Annual Dairy Day. “Dairy Replacement Housing” and “Photoperiod Manipulation for Dairy Cows”. 22 attended.

01/11/2005 Syracuse, NY. Farm Credit Annual Dairy Update Meeting. “Air Emissions from Dairy Farms – What’s Up?” 84 attended.

01/26/2005 Syracuse, NY. NRAES Dairy Calves and Heifers: Integrating Biology and Management. “Pre-Weaned Calves: Housing and Considerations.” ~280 Registered.

02/03/2005 North Java, NY. 2005 Dairy Congress Meeting. “Air Emissions – What’s Up?”. 74 attended.

02/04/2005 Randolph, NY. 2005 Dairy Congress Meeting. “Air Emissions – What’s Up?”. 68 attended.

02/18/2005 Westminster, MD. Maryland Dairy Association Annual Meeting. “Challenges and Opportunities in Manure Management” and “Air Emissions – What’s Up?”. 95 registered.

02/24/2005 Cornell University, Ithaca, NY. Graduate Seminar “Anaerobic Digestion Systems in Wisconsin.” 12 attended.

03/01/2005 Syracuse, NY. NEDPA Annual Meeting. “Dairy Farm Selection and Issues for the NAEMS”. 125 Registered.

03/10/2005 Chicago, IL. National Milk Producers Federation: Environmental Task Force Meeting. “EPA Air Emission Compliance Agreement Overview”. 30 attended.

03/11/2005 Ithaca, NY. Animal Science 351 Class. “Photoperiod Manipulation” 57 students.

03/15/2005 Syracuse, NY. NRAES Dairy Manure Management; Treatment, Handling, and Community Relations Conference. “Manure Treatment, Water Quality, and Air Emission: They are All Linked”. 200 Registered.

03/15/2005 Syracuse, NY. NRAES Dairy Manure Management; Treatment, Handling, and Community Relations Conference. “Anaerobic Digestion Performance Goals: Affect on System Components and Costs”. 200 Registered.

03/17/2005 Syracuse, NY. Cornell Manure Management Program Anaerobic Digestion Design Conference. “Anaerobic Digestion – What’s Important?”. 105 attended.

03/18/2005 Syracuse, NY. Cornell Manure Management Program Anaerobic Digester Design Conference. “Project Management from Conception to Completion”. 105 attended.

03/27/2005 Fonda, NY. Cornell Cooperative Extension. “Pre-Weaned Calves: Housing Considerations” and “Facilities for Transition Cows”. 29 attended.

03/29/2005 Auburn, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 11 attended.

03/29/2005 Leroy, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 33 attended.

03/30/2005 Ithaca, NY. Animal Science 351 Class. “Dairy Air Emissions – What’s Up?” 57 students.

03/30/2005 Ithaca, NY. Animal Science 351 Class. “Manure Treatment System Options”. 47 students.

04/01/2005 South New Berlin, NY. Cornell Cooperative Extension. “Pre-Weaned Calves: Housing Considerations” and “Facilities for Transition Cows”. 14 attended.

04/4/2005 Burnville, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 20 attended.

04/6/2005 Chazy, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 18 attended.

04/6/2005 Greenwich, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 58 attended.

04/7/2005 Little Falls, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 45 attended.

04/11/2005 Liberty, NY. Cornell Cooperative Extension. “Dairy Air Emissions – What’s Up?” 17 attended.

04/13/2005 Ithaca, NY. Animal Science 351 Class. “Basics of Ventilation”, “Natural Ventilation of Freestall Barns”, “Tunnel Ventilation of Freestall Barns”, and “Heat Stress Relief”. 55 students.

05/26/2005 Ithaca, NY. NYSCHAP Herd Health and Biosecurity Risks Conference. “Farm Planning for Biosecurity”. 10 students.

09/08/2005 Lowville, NY. Cornell Cooperative Extension. “Manure Storages”. 26 attended.

10/14/2005 Bath, NY. Cornell Cooperative Extension. “Dairy Facilities Walkthrough”. 27 attended.

11/09/2005 Auburn, NY. Soil and Water Conservation Society State Chapter Meeting. “Dairy Facility Air Emissions; the Need to Assess and How to Do So”. 44 attended.

11/17-18/2005 Batavia, NY. McLanahan Corporation's Sand-Laden Manure Conference. “Economics of Sand-Manure Separation and Advanced Treatment” 55 attended.

11/30/2005 Waterloo, NY. 2005 Northeast Certified Crop Advisor Conference. “Dealing with Manure Solids” and “Dairy Facility Air Emissions; the Need to Assess and How to Do So” 160 attended.

12/07/2005 Penn Yan, NY. Cornell Cooperative Extension 2005 Pest and Crop Management Congress. “Manure Storage on NY State Dairy Farms”. 38 attended.

12/15/2005 Croghan, NY. and Adams, NY. Cornell Cooperative Extension. “Dairy Manure Storage – How to Reduce the Risk of Pollution” 27 attended.

## **PROGRAM SUMMARY LIST - 2004**

01/28/2004 Syracuse, NY. NYSERDA's Innovations in Agriculture Conference. Invited Speaker. "Energy Management for Heat Stress Relief" ~50 attended.

01/28/2004 Syracuse, NY. NYSERDA's Innovations in Agriculture Conference. Invited Speaker. "Removing sand bedding" ~50 people.

03/02/2004 Lowville, NY. Dairy Facilities Modernization Program. "Facilities Planning On-Farm Workshop" 9 attended.

03/11/2004 Philadelphia, PA 104<sup>th</sup> Penn Annual veterinary Medicine Conference. Invited Speaker. "Calf and heifer facilities", "Ventilation of dairy facilities", "Dry cow/transition cow facilities", "Flooring for dairy cows", and "Photoperiod manipulation". 26 attended.

04/15/2004 Auburn, NY. NEDPA Board Meeting. "Air emissions". 10 attended.

04/19/2004 Syracuse, NY. NSCHAP State Veterinary Meeting. "In-filed quantification of tunnel ventilation fans" and "Air emissions from dairy barns". 12 attended.

04/23/2004 Oneida, NY. Oneida Waste Water Treatment Plant – technical tour. 9 attended.

04/29/2004 Cobleskill, NY. Invited Speaker. "Flooring for dairy cows" and "Dairy barn design issues". 30 attended.

05/20/2004 Cornell University. NYSCHAP Herd Health and Biosecurity Risk Evaluation Meeting. "Farmstead planning for biosecurity". 9 attended.

06/11/2004 Norbco, Inc. Invited Speaker. "Tunnel ventilation for cow barns" and "Cow Comfort". Annual Norbco Sales Meeting. 13 attended.

06/7/2004 Cornell University. Summer Dairy Institute at the College of Veterinary Medicine. Invited Speaker. "Tunnel Ventilation for Freestall Barns", "Natural Ventilation for Freestall Barns", and "Heat Stress Mitigation Techniques". 14 students.

06/16/2004 National Conference Call No. 1. Air Emissions and the EPA Consent Agreement. 50+ attended.

7/20/2004 NEDPA Environmental Issues Update Workshop. Nobelhurst Farms. Air Emissions and the EPA Consent Agreement. 8 attended.

7/20/2004 National Conference Call No. 2. Air Emissions and the EPA Consent Agreement. 35 attended.

7/21/2004 NEDPA Environmental Issues Update Workshop. Oakwood Dairy, LLC. Air Emissions and the EPA Consent Agreement. 12 attended.

7/23/2004 NEDPA Environmental Issues Update Workshop. Hanehan Family Dairy. Air Emissions and the EPA Consent Agreement. 14 attended.

7/28/2004 Cornell Field Crop Retreat. Air Emissions and the EPA Consent Agreement. 24 attended. Contact time = 1.5 hrs.

8/9/2004 NYSERDA/Northeast Dairy Business/Cornell Manure Management Program manure treatment tour. ~ 140 attended. Contact time = 7 hours.

8/26/2004 Chautauqua County Innovative Manure Treatment System Tour and Discussion. Invited Speaker. 51 attended. Contact time = 4 hours.

10/19/2004 Miner Institute. Dairy Manure Treatment and Handling. Invited Speaker. 14 attended. Contact time = 4 hours.

11/19/2004 Cornell Cooperative Extension In-service Meeting. Agricultural Air Emissions. 21 attended. Contact time = 8 hours.

### **PROGRAM SUMMARY LIST - 2003**

01/13/2003 Randolph, VT. Vermont Tech – Cornell Winter Dairy Management School. Invited Speaker. “Photoperiod Manipulation – Principles and Design” ~45 people.

01/24/2003 Syracuse, NY. New York State Cattle Health Assurance Program. Invited Speaker for monthly meeting. “Sand Bedding for Stalls” and “Economics of Sand-Manure Separation”. 12 NYCHAP staff

01/29-31/2003 Fort Worth, TX. American Society of Agricultural Engineers Fifth International Dairy Housing Conference. Program Committee and Proceedings Committee member. Two papers “Lighting Design considerations for Employment of Photoperiod Management in Freestall and Tie stall Barns” and Tunnel Ventilation for Freestall Facilities – Design, Environmental Conditions, Cow Behavior, and Economics. 200 registered.

02/12/2003 Orange Co. Cooperative Extension -winter dairy management series meeting. “Considerations in Flooring” and “Facilities for dairy replacements”. 17 attended.

02/13/2003 Sullivan Co. Cooperative Extension -winter dairy management series meeting. “Considerations in Flooring” and “Facilities for dairy replacements”. 10 attended.

02/18-20/2003 Harrisburg, PA. NRAES Freestall Barn and Milking Center Construction: Methods and Materials program. Invited speaker. “Flooring Considerations for Dairy Cows” and “Providing a Cow-Comfortable Environment”. 200 Registered.

02/27/2003 Malone, NY. Regional Workshop for Dairy Facility Contractors and Suppliers. “Considerations in Flooring” and “Facilities for dairy replacements”. 11 attended.

3/19/2003 Greenwich, NY. “Trouble Shooting Cow Comfort on Your Farm”. Battenkill Veterinary Clinic client appreciation program. Invited speaker. 40 attended.

3/26/2003 Chazy, NY. “Sand for Stall Bedding” and “Economics of Sand-Manure Separation”. PRO-DAIRY sand-manure conference. 26 attended.

3/28/2003 Batavia, NY. “Sand for Stall Bedding” and “Economics of Sand-Manure Separation”. PRO-DAIRY sand-manure conference. 40 attended.

4/3/2003 Westmoreland, NY. Invited discussion group leader. County dairy group. 9 attended.

4/4/2003 Watkins Glenn, NY. On-farm program for Cornell dairy students. 40 attended.

4/9/2003 Troy; NY. Invited speaker. NYSCHAP program. “Sand bedding: from stall to storage”. 8 attended.



6/3-7/2003 Ragusa, Italy. Invited speaker. CoRFiLaC Nutrition and Management of Dairy Cattle. “Cow Comfort Guideline”, “Facilities for Dry and Fresh Cows”, “Newborn Calf Housing”, and “Transition and Adolescent Heifer Housing”. 90 attended.

7/2/2003 Cornell University. Invited speaker. “Farmstead layout for Biosecurity”. NYSCHAP program. 7 attended.

7/10/2003 Sioux Falls, SD. Invited speaker. McLanahan Corporation’s Sand-Laden Manure Conference. “Economics of Sand-Manure Separation”. 40 attendees.

7/18/2003 Ithaca, NY. South Central NY Dairy & Field Crops Team fresh cow program. “Facilities for Fresh Cows” 20 attended

8/13/2003 Chazy, NY. Cornell Basic Nutrition Conference. “Dairy Facility Basics”. 55 attended.

10/24/2003 Cobleskill, NY. Invited speaker-SUNY Cobleskill. “Flooring Considerations for Dairy Cows”. 12 Students.

11/12/2003 Ithaca, NY. Cornell Cooperative Extension In-service Meeting. “Dairy Housing Topics”. 13 attended.

11/18/2003 Central NY – anaerobic digester tour for visitors from Russia. 4 attended.

11/21/2003 Skaneateles Lake Watershed – technical tour for watershed planners and waste system designers. 5 attended.

12/9/2003 Jamestown, NY. Small farm modernization program. “Housing, feeding, and manure systems” 37 attended.

12/10/2003 Bath, NY. Small farm modernization program. “Housing, feeding, and manure systems” 25 attended.

12/11/2003 Oneonta, NY. Small farm modernization program. “Housing, feeding, and manure systems” 16 attended.

12/12/2003 Carthage, NY. Small farm modernization program. “Housing, feeding, and manure systems” 70 attended.

12/18/2003 Burlington, VT. Invited speaker. Poulin Grain Corporation’s facility workshop. “Dairy Facility Evaluation Techniques” 31 attended.

## PROGRAM SUMMARY LIST - 2002

01/11/2002 Scipio, NY. Cornell Veterinary student interim class “Facilities for dairy cattle”. On farm program. 12 students.

01/16/2002 Plattsburg, NY. Clinton County Large Herd Discussion Group. Invited Speaker “Sand Bedding from Stall to Storage”. 18 people.

01/17/2002 Chazy, NY. Clinton County Winter Dairy Management Meeting. Invited Speaker. “Improving Ventilation in Your Dairy Facilities” and “Facilities for Dry Cows”. 30 people.

01/22/2002 Lewisburg, PA. Central Susquehanna Dairy Day. “Considerations in Flooring”. Invited speaker. 45 people.

1/25/2002 Syracuse, NY. NYSCHAP Monthly Meeting. Invited speaker. “Housing and Health for Newborn and Transition Calves”. 15 veterinarians.

2/18/2002 Lewis, NY. PRO-DAIRY, NYSEG and NiMO Stray Voltage and Photoperiod Control Program. Program Organizer “Photoperiod Manipulation – Principles and Design” 16 participants.

2/20/2002 Waterville, MA. Feed Commodities International. Invited Speaker “Trouble Shooting Cow Comfort on Your Farm” and “Photoperiod Manipulation – Principles and Design” 53 people.

2/25/2002 Watertown, NY. Winter Dairy Management Program. “Trouble Shooting Cow Comfort on Your Farm”. 43 people.

3/05/2002 Jeffersonville, NY. Sullivan County Annual Ag. Program. Program Organizer “Photoperiod Manipulation – Principles and Design” 25 people.

3/21/2002 Penn Yan, NY. East View Veterinary Clinic Annual Customer Appreciation Program. Program Organizer. “Photoperiod Manipulation – Principles and Design”. 65 people.

3/28/2002 Grandville, NY. Grandville Veterinary Clinic. Regional Veterinary practice round table discussion – Invited speaker. 15 Veterinarians from Grandville, Batten Kill, Valley, and Ruppert Valley Veterinary Clinics.

3/29/2002 Grandville, NY. Grandville Veterinary Clinic. Invited Speaker. “Improvements to Tie Stall Barns to Improve Cow Comfort and Profitability. 8 participants.

4/23/2002 Geneva, NY. Keseca Veterinary Clinic. “Planning Your Facility – Building Your Plan”. Invited speaker. 75 people.

4/25/2002 Malone, NY. CCE. “Facilities for Calves and Heifers”. Contractor’s discussion group. 10 participants.

4/30 – 5/1/2002 Central, NY. PRO-DAIRY. Program Organizer. Dairy waste treatment systems tour. 19 participants.

5/3/2002 Sullivan Co, NY. Invited Speaker. Dairy expansion and waste management tour. 24 participants.

5/10/2002 Cobleskill, NY. Dairy facilities and waste management discussion for SUNY Cobleskill Dairy class. 15 participants.

6/28/2002 Columbus, OH Invited speaker. “Considerations in Flooring” for the Hoof Trimmers Association 2002 Hoof Health Conference. ~300 registered.

7/9/2002 Attica, NY. Discussion Leader. “Dairy facility expansion planning and issues”. 10 attendants.

8/6/2002 Seneca Falls, NY. Empire Farm Days Dairy Profit Seminar Panel Member – “Transition Cow Housing”. ~200 attended.

8/12 – 8/13/2002 Ithaca, NY. Advanced Dairy Nutrition and Management for Agri-service Professionals Program. Invited Speaker. “Facilities for Transition Cows”, “Newborn and Transition Calf Housing”, and “Photoperiod Considerations for Lactating Cows”. 80 attendants.

8/14/2002 Lowville, NY. On-farm discussion leader – “Dairy Facility Considerations”. 8 attendants.

9/4/2002 Ithaca, NY. “Trends in housing systems on New York dairy farms”. 25 Swedish visitors.

10/8/2002 Eastern NY. On-farm discussion leader – “Dairy Housing and Waste Considerations”. 10 attendants.

11/13/2002 Ithaca, NY. Invited Speaker. “New York State Dairy Facilities” 5 Japanese Veterinarians.

11/15/2002 Altoona, PA. McLanahan Corporation’s Sand-Laden Manure Conference. Invited Speaker. “Ins and Outs of Sand Bedding” and “Economics of Sand-Manure Separation”. 75 attendees.

12/5/2002 Bath, NY. Stuben County Dairy Day. Invited Speaker. “Trouble Shooting Cow Comfort on Your Farm”. 24 attendees.

12/10/2002 Lowville, NY. Lewis County Dairy Facility Day. Invited Speaker. “New Born and Transition Calf Facilities”. 30 attendees.

12/17/2002 Canandaigua, NY. Does it Make Sense Conference. Invited Speaker. “Heat Stress Mitigation Techniques and cow response implications.” 70 attendees.

12/20/2002 Norwich, NY. PRO-DAIRY, NYSEG and NiMO Stray Voltage and Photoperiod Control Program. Program Organizer “Photoperiod Manipulation – Principles and Design” 33 people.

## **PROGRAM SUMMARY LIST - 2001**

01/17/2001 Lowville, NY. Winter Dairy Management Series Meeting “New Concepts in Cow Comfort”. 30 people.

01/23/2001 Randolph, NY. County Extension Meeting. Presentation “Photoperiod Manipulation for Tie Stall and Freestall Barns: Is it for you?” 60 people.

01/24/2001 Sullivan Co, NY. Winter Dairy Management Series Meeting “New Concepts in Cow Comfort”. 8 people.

01/29/2001 Randolph, VT. Winter Dairy Management Series Meeting “New Concepts in Cow Comfort”. ~130 people.

02/01/2001 Harrisburg, PA. NRAES Milking Systems and Parlors Conference. Planning committee member and presented paper: “Environmental Control of Today’s Milking Center”. 325 people.

02/07/2001 Phelps, NY. Moped Meeting. “New Born and Transitional Heifer Housing”. 32 people.

02/08/2001 Watertown, NY. Winter Dairy Management Series Meeting “ New Concepts in Cow Comfort”. ~20 people.

02/22/2001 Penn Yan, NY. Winter Dairy Management Series Meeting “Tunnel Ventilation for Tie Stall Barns” 18 people.

03/01/2001 Hartford and Saratoga, NY Ventilation / Fly Control Meeting – on farm. 35 people.

03/08/2001 Pfizer Animal Health on Farm Workshop to discuss in-depth calf health concerns on-farm. 7 people.

03/14/2001 Chateaugay, NY. Winter Dairy Management Series Meeting “Facilities for Dairy Replacements” 27 people.

03/15/2001 Norwood, NY. Winter Dairy Management Series Meeting “Facilities for Dairy Replacements” 30 people.

03/19/2001 Auburn, NY Winter Dairy Management Series Meeting “New Concepts in Cow Comfort”. ~30 people.

03/28/2001 SUNY Morrisville, NY Winter Dairy Management Series Meeting “New Concepts in Cow Comfort”. ~40 people.

04/03/2001 Penn Yan, NY Eastview Veterinary Clinic Annual Dairy Producers Meeting “Cow Comfort for Tie stall and Freestall Operations”. ~90 people.

5/10/2001. Morrison Hall, Cornell Campus. Invited speaker for SUNY Morrisville class. “Heifer Housing Options and their Implications”. 12 students.

6/19/2001. Miner Institute, Chazy, NY. Facility/stall/ventilation considerations. Basic Dairy Nutrition Class. ~50 students.

8/21/2001. NYSERDA Long Day Lighting Farm Tour. 7 participants.

8/28/2001. Barn Renovation Meeting. Oneida County, NY. Heather Sweeney. 8 participants.

9/20/2001. Western New York Heifer Discussion Group quest speaker. “New born and transition heifer housing”. 28 participants.

9/20/2001 Attica Veterinary Clinic. Invited speaker: “Modern Dairy Facilities” 9 participants.

10/10/2001 Blue Seal Feeds annual Dairy Sales Meeting. Invited speaker: “Designing Dairy Facilities for Cow Comfort”. 45 participants.

10/10/2001 Cargill Animal Nutrition regional meeting. Invited speaker: “Dairy Calf and Heifer Housing”. 30 participants.

10/30/2001 Blue Seal Feeds – Transition Cow Conference. Key note speaker. “Trouble Shooting Cow Comfort on Your Farm”. 60 participants.

11/2/2001 Agway – Transition Cow Conference. “Cow Comfort for Transition Cows”. 35 participants.

11/5/2001 Delaware Co. Cooperative Extension program. “Long day lighting for dairy cows”. 20 participants.

11/7/2001 Herkimer Co. Cooperative Extension program. “Photoperiod Manipulation – Principles and Design” 60 participants.

11/8/2001 Chenango Co. Cooperative Extension program. “Photoperiod Manipulation – Principles and Design” 45 participants.

11/17/2001 PRO-DAIRY Transition Cow Conference program. “Housing the Transition Cow”. 80 participants.

12/12/2001 NYSEG and NiMO Stray Voltage and Photoperiod Control Program. “Photoperiod Manipulation – Principles and Design” 38 participants.

12/18/2001 Winter Dairy Management Series Meeting Auburn, NY. “Designing a Heifer Facility for Peak Performance”. 16 participants.

## PROGRAM SUMMARY LIST - 2000

1/26/2000 Dairy Farmers of America Conference - Lake Placid, NY. Talk on “Facility Design for Cow Comfort”. 19 people.

2/1 – 2/3/2000 NRAES Dairy Housing and Equipment Systems Conference – Harrisburg, PA. Conference Chairman and presented two papers “Tunnel Ventilation for Freestall Barns” and “Considerations in Flooring”. ~350 people.

2/10/2000 Guest Lecture at Alfred College – Alfred, NY. “Cow Comfort Impacts on Profitability”. 8 people.

2/11/2000 On-farm Program with Skaneateles Lake Watershed Agricultural Program. Discuss Ventilation and Nutrient Runoff Control. 4 designers from the watershed in attendance.

2/22 & 2/23/2000 Two programs in western Vermont for Feed Commodities International. Ideas to Improve Dairy Operations and Profits. Spoke on “Troubleshooting Cow Comfort on Your Farm” and “Photoperiod Manipulation: Is it for you?” Total of ~ 80 in attendance.

2/29/2000 Speaker on Penn State Extension Program – Is Dairy Expansion for Me?: “Site Evaluation and Layout”. Troy, PA ~ 50 people.

3/3, 5, 10, 12, 14, 17/2000 Teach An. Sci. 351 Class. ~50 Students. Topics: Ventilation, Heat Stress Relief, Tunnel Ventilation, Flooring, and Replacement Facilities.

4/7/2000 Speaker for Trouble Shooting Your Freestall Program: “Trouble Shooting Cow Comfort on Your Farm”. Dryden, NY ~ 35 people.

4/14/00 Quest speaker at SUNY Morrisville. “Trouble Shooting Cow Comfort on Your Farm”. Morrisville, NY ~ 30 students.

4/19/2000 On-farm program: “Cow Comfort” organized by Beth Spaugh and Nutria Feeds. Plattsburg, NY ~32 people attended.

4/21/2000 Guest speaker at SUNY Cobleskill. “Photoperiod Manipulation for Dairy Cows” and “Translucent Roofed Structures”. Cobleskill, NY ~ 10 students.

7/27/2000 On-farm program: “Four Rows or Six Rows” with Peter Cizmarik. Cohocton, NY – 23 people attended.

10/24-26/2000 Guest speaker for Pfizer Animal Health program: “Climate Control and Housing Management for Dairy Replacements” – total of 36 people attended.

11/15/2000 On-farm program: “Troubleshooting Cow Comfort in Your Barn”. Broome County, NY. 20 attended.

11/17/2000 Guest Speaker at NYSERDA Innovations in Agriculture Workshop. Long-Day Lighting for Improved Milk Production. Engineers, utility officials, and consultants in attendance, 22 total.

11/33/2000 Cornell Cooperative Extension in-service Presentation: Calf Housing and Greenhouse Barn Study Engineering Aspects. 15 attended.

12/6-7/2000 NEDPA - Whole Farm Analysis Program. Technical Breakout Session Co-leader. Presented information on trouble shooting cow comfort on farms. 4 attended technical session.

12/14/2000 Lewis County Dairy Facilities Day 2000. Presentation presented “Photoperiod manipulation in tie stall and freestall barns: Principles and design”. 26 attended.



## PROGRAM SUMMARY LIST - 1999

1/18/1999 Large Herd Conference - Chazy, NY. Talk on “Cow Comfort and Facility Layout”. 45 people.

1/19/1999 Large Herd Conference – Potsdam, NY. Talk on “Cow Comfort and Facility Layout”. 32 people.

1/26/1999 Raising Dairy Replacements Successfully Course – Greene, N.Y. Talk on “Calf & Heifer Housing”. 17 people.

2/3/1999 Raising Heifers Successfully Course – Bath, NY. Talk on 1) “Remodel or Build New?”, 2) “Characteristics of Successful Heifer Housing”, and 3) “Heifer Housing Options”. 33 people.

2/10/1999 Agribusiness Roundtable Discussion – Varysburg, NY. Roundtable discussion on cow comfort. 26 people.

2/11/1999 Western New York Dairy Congress – Delevan, NY. Talk on “Facilities Design for Cow Comfort”  
250 people.

2/16/1999 Morning on-farm program to discuss environmental problems calves are having in greenhouses – Washington County, NY. 9 people

2/16/1999 Afternoon classroom program with follow-up on-farm discussion to educated producers, builders, veterinarians, and county educators on the pros and cons of greenhouses – Washington County, NY 41 people.

2/23/1999 Herd Managers Series Meeting – Oriskany, NY. Talks on “Freestall Improvement and Maintenance”, “Heifer Housing Options”, and “Tunnel Ventilation of Tie stall and Freestall Barns”. Oneida County, NY 17 people.

3/4/1999 Ag. Contractors and Suppliers Meeting – Moria, NY Talks on “Freestall Building Design for Cow Comfort”, “Milking Center Design”, and “Building Failures”. Franklin County, NY 9 people.

3/4/1999 Producers Round Table Meeting – Canton, NY Question and answer session for producers planning and expansion. St. Lawrence County, NY 15 people.

3/16/1999 Ag. Construction Contractors Meeting – Warsaw, NY Talk on “Barn Failures Due to Snow Loading” Wyoming County, NY 10 contractors.

3/16/1999 Evening program with producers – Livingston, NY Talks on “Barn Failures Due to Snow Loading” and “Working with Contractors” Wyoming County, NY 15 people.

3/17/1999 Wyoming County Crop and Shop Group – Table Rock Farms, NY Discussion on “Bunker Silos – Construction, Management, and Environmental Concerns” Wyoming County, NY 16 people.

3/19/1999 Upstate Farms Cooperative – North Java, NY Presentation on “The Effects of Light on Milk Production” Wyoming County, NY 60 people.

3/23-3/26/1999 NEDPA tour of Michigan Farms. Visited 8 progressive dairy facilities in Michigan – Discussed facilities, etc. 35 people.

3/16,19,21, and 23/1999 Teach An. Sci. Class. 48 Students. Ventilation, Heat Stress Relief, Construction Contracting, Tunnel Ventilation

4/26/1999 New York Watershed Program – Delaware County. Visited two farms to discuss animal housing issues related to improving water quality. 5 representatives from the watershed program and CCE.

7/1/1999 Ventilation In-Service for Cargill Nutrition – Tompkins and Schuler Counties. Visited one tie stall and two free stall barns to discuss ventilation issue and related topics. 8 reps attended from Cargill.

7/28/1999 Cow Comfort and Environment Program for Washington County Ag. Team. Presented and led discussion on two Washington County Dairy Farms. 122 Dairy Producers attended.

8/12/1999 Cow Comfort to Increase Profitability. Presented to farm group assembled by Cargill in Maine. 15 attendees.

8/13/1999 On-farm training program for Cargill representatives in Albany district. 8 attended.

8/23/1999 On-farm cow comfort program “Enhancing Tie Stall Cow Comfort” with Janet Allard. 25 attended.

8/24/1999 Presentation with follow-up on-farm cow comfort program “Enhancing Freestall Cow Comfort” with Dave Balbian. 15 attended.

8/25/1999 Presentation with follow-up on-farm cow comfort program “Enhancing Tie stall Cow Comfort” with Dave Balbian. 5 attended.

9/1/1999 Presentation with follow-up on-farm cow comfort program “Enhancing Freestall Cow Comfort” with Dave Balbian. 16 attended.

10/6/1999 PRO-DAIRY in service. Presentation “Resources of NRAES and MWPS at Your Fingertips”. ~30 people attended.

10/24/1999 On-Farm discussion with Karen Baase to discuss facilities and cow comfort. Program name “Dairy Housing Facilities”. 10 people attended. Local News Paper article written.

11/3/1999 Presentation to Northeast Professional Heifer Growers Association at annual meeting “Newborn and Transitional Heifer Housing”. Wrote paper for conference proceedings. ~120 paid attendance.

12/5/1999 Power point Presentation Workshop. Assisted with the development of presentation for 10 students who traveled to World Dairy Expo with Agway Funding. 10 students.

12/8/1999 Presentation for Annual Lewis County Dairy Program “Sand bedding – From Stall to Storage”. ~30 attended.

12/9/1999 On-Farm discussion with Jim Hilson “Exploring Environmental Issues and Options”. ~ 20 NY City watershed engineers, planners, and local farmers attended.

## **PROGRAM SUMMARY LIST - 1998**

8/19/1998 NEDPA program to discuss Tunnel Ventilation of Oakwood Dairy facility. – 30 attended (NEDPA members).

10/27/1998 Morrison: Program to discuss cow comfort and waste management for 44 German dairy producers, consultants, and government officials. Follow-up on farm program at McMahan's and Rejman's dairy farms to discuss cow comfort.

11/03/1998 NEDPA program to discuss new CAFO regulations – classroom program and follow-up farm discussion with producers defining the problems and offer potential solution(s). – 55 NEDPA attended

11/10/1998 MacMahon's EZ Acres: On-farm program for expansion and cow comfort – 25 attended (producers and CCE field educators, ABEN faculty)

11/20/1998 Oakwood and Rejman – orientation tour for Dr. Michael Kelly from Scotland

11/23/1998 Riley-Robb: “Basics of Ventilation” and “Natural Ventilation of Freestall Barns” – 14 attended (CCE field educators, agri-service personnel, ABEN faculty)

11/23/1998 Beck Farm and McMahan's EZ Acres dairy farms: On-farm discussion relative to Natural Ventilation – 13 attended