

NCCC-9 MEETING MINUTES

MWPS: Research and Extension Educational Materials

May 12-13, 2009

Chase Suites Hotel, West Des Moines, IA

Administrative Advisor: Gerald A. Miller Iowa State University 132 Curtiss Hall Ames, IA 50011-1050	Chair: Rick Stowell University of Nebraska 218 L. W. Chase Hall Lincoln, NE 68583	Vice-Chair: Tom Scherer NDSU Box 5626 Fargo, ND 58015	Secretary: Steve Pohl SDSU Box 2120, ABE Dept. Brookings, SD 57007
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Members in attendance:

Ted Funk, University of Illinois	Steve Pohl, South Dakota State University
Jay Harmon, Iowa State University	Tom Scherer, North Dakota State University
Rick Stowell, University of Nebraska	Joe Zulovich, University of Missouri
Brian Holmes, University of Wisconsin	Don Jones, Purdue University
Representing MWPS: Kathy Walker, Iowa State University	
Administrative Advisor: Gerald Miller, Iowa State University	

Members absent:

Steve Hoff and Hongwei Xin (IA), Yuanhui Zhang (IL), Joe Harner and Pat Murphy (KS), Kevin Janni and Bill Wilcke (MN), Rick Koelsch and David Shelton (NE), Ken Hellevang (ND), Randall Reeder and Lingying Zhao (OH), Dick Nicolai (SD), and David Kammel (WI)

Meeting – May 12

Committee chair Rick Stowell opened the meeting at 1:00 p.m. and gave a quick overview of agenda items, goals and minutes from last year. A motion was made Brian Holmes and seconded by Joe Zulovich to approve the minutes. Motion carried. A discussion followed on membership to the committee and members not participating. Rick Stowell discussed the possibility of adding non-faculty extension and field engineers to the group. A review of the NCCC-009 request for continuation objectives rewritten by Joe Zulovich and Joe Harner was discussed. These objectives are:

1. Foster science-based, multidisciplinary activities for the protection of our natural resources through sustainable food, fiber and energy systems, including protection of surface and ground water, soils, and air quality through appropriate technology transfer.
2. Develop science-based information for nontraditional audiences, in addition to traditional audiences; regarding food, fiber and energy production to help ensure resources are sustained and the environment is protected.
3. Identify, conceptualize and communicate emerging issues for food, fiber and energy production systems that necessitate basic and/or applied research to maintain the viability and competitive marketing advantage of U.S. food, fiber and energy sectors.
4. Enlarge and preserve the knowledge base made available through NCCC-009 activities and transform this knowledge for use by clientele-based media.

Further discussion followed with Don Jones suggesting having the meeting on a Land-grant university to get people to come to meeting. Grant proposals with an extension component need to have an integrated

approach. Expectations are high for integrated proposals. Ted Funk proposed writing a template or logic model on how to integrate extension into a grant. Researchers would be a targeted audience. Don Jones indicated that we need to tell department heads of what's available from the NCCC-9 committee. We also need to direct the researcher to an extension person who can help write the proposal. Don Jones suggested that the list be pared down to what we can do, water quality, structures and environment and livestock housing. Two audiences would include new extension and or researchers.

Multi-State Projects

Dr. Dwaine Bundy gave a presentation on a potential multi-state project concerning design specifications for agricultural structures and utilizing the International Building Code (IBC). Dr. Bundy indicated that builders, insurance companies, and building supply companies want design specifications for ag structures. He suggested a publication that would look at wind and snow loads for design, what caused building failures and solutions to reduce building failures. He indicated that insurance companies will start requiring minimum standards and that contractors need better and easier standards to follow. Dr. Bundy suggested that Midwest Plan Service develop a design manual for agricultural buildings. The handbook should be short and to the point. Insurance companies have offered to pay for the development of the handbook. This handbook could replace the need for states to adopt the IBC code for ag buildings. This handbook would be used by insurance companies, builders, and for teaching agricultural engineers. A committee having Dwaine Bundy, Dave Bonhoft, Gary Anderson and Jay Harmon was suggested.

Other multi-state projects discussed included a proposal by Brian Holmes concerning getting plastic to recycling sites and identifying where the balers of these plastics are located. Brian Holmes also suggested a program on composting livestock mortalities. With bio-security issues this is becoming a major issue in all of our states. Don Jones suggested developing a handbook on tile drainage and the associated problems that can occur. Tom Scherer indicated that programs should be developed in the areas of alternative energy including wind, solar, and energy conservation. Individuals need to be identified that can put publications and programming together. Examples of energy publications from NDSU were shown. Training to do energy audits of grain drying and irrigation systems was also discussed for programming ideas.

Wednesday May 13, 2009

Administrative Report, Dr. Gerald Miller:

Dr. Gerald Miller indicated that our current project is in the 5th year and needed to be renewed. The submitted renewal was approved from the NCRA by Dr. Arlen Leholm. Appendix E starts on October 1, 2009. Gerry indicated that potential members of the committee, who are not faculty, can become members of this committee if they are from a University. He also said that the NIMSS Impact Statement should be done or updated since we are in the fifth year of our approval. Dr. Miller provided an update on the Federal Budget FY10. We also discussed the NCCEA logic models that were related to energy. There is an energy initiative to develop materials. Jerry will contact the program leader team on working with the NCCC-009 Committee on the development of educational materials. Other multi-state activities discussed included the NC506 committee on "Sustainable Biorefining Systems for Corn in the North Central Region".

MWPS Update:

Jay Harmon and Kathy Walker gave an update on the MWPS activities at Iowa State. A summary is provided in Appendix A.

State Reports

Committee members gave verbal reports of significant accomplishments and outcomes pertaining to NCCC9 and MWPS and impacts. See Appendix B for the written versions of the state reports.

Business Meeting:

The business meeting was called to order by Committee Chair Rick Stowell. The nomination of Lingying Zhao for Secretary was put forward. There were no other nominations. A motion to nominate Lingying Zhao for Secretary was made by Rick Stowell and seconded by Steve Pohl. Motion passed.

Officers for FY10 are:

Chair - Tom Scherer

Chair-elect - Steve Pohl

Secretary – Lingying Zhao

Accomplishments

- In an effort with NE, MN, and SD, educated over 100 swine vets on ventilation, energy and emergency procedure issues. These vets will multiply that initial effort and translate it to a large segment of the Iowa swine industry.
- This NRI [now AFRI]-funded integrated project had its origins from NCCC-9 discussions of educational needs of the livestock industry. During the past year, the project facilitated the initial and continuing development of the Air Quality web section of the Animal Manure Management eXtension website.
- EPCRA Reporting [NE, WI, IA, KS, MN, MI, IL, and TX]: Early in 2009, a page on the AQEAA Air Quality web site was developed to address US EPA's release of a final rule that clarified required reporting of air emissions under the Emergency Response and Community Right-to-Know Act (EPCRA). This educational effort involved communication and sharing of resources, especially via NCCC-9. During the month of January 2009, the web page was the second most visited page on the entire eXtension system. Several thousand large CAFOs (concentrated animal feeding operations) across the U.S. were potentially impacted by this ruling, and initial indications are that a significant number of these operations were getting access to information via the Air Quality web site.
- The project co-sponsored a national conference entitled "Mitigating Air Emissions from Animal Feeding Operations", which was held in Des Moines, IA, May 19-21, 2008. This conference included 52 presentations that summarized mitigation systems and their applicability, limitations, and costs. A book of conference proceedings was produced, which is distributed through MWPS. One-page technology summaries are being disseminated in a searchable electronic format within the Animal Manure Management eXtension website.
- A multi-state project (KS, MS, MN, and SD) developed and researched low profile cross ventilated (LPCV) dairy freestall barns. This technology has been widely accepted as the footprint for dairies in the upper Midwest.
- Multi-state ventilation workshops (Managing Your Unseen Employee: The Ventilation System) have been held in SD, NE, IA, MN, KS, MS and Ill. Over the six year period since the inception of the program, more than 75 workshops have been held and we have had over 1,000 participants in attendance which included swine producers, industry personnel and veterinarians.

- The following chapter revisions for MWPS-7 have been completed by authors and sent to MWPS:
 - Chapter 4. Milking Herd Facilities
 - Chapter 5. Milking Center
 - Chapter 8. Manure and Effluent Management
 - Chapter 9. Feeding Facilities

The following books are new from Midwest Plan Service:

- Private Water Systems (MWPS-14)
- Farm Machinery & Labor Sharing (NCFMEC-21)
- CIDWT, 2nd Edition

New adopted books:

From Illinois

- Agricultural Ventilation Fans: IL-09

From ISU

- Mitigating Air Emissions from Animal Feeding Operations: MWPS-AIR
- Book on CD

Outcomes


- EPCRA reporting. NE, IA, WI and IL worked together to assist state emergency management agency personnel to design forms and calculations that producers with CAFOs could use to report continuous emissions of ammonia and hydrogen sulfide. This was in response to EPA's recent and final rule on CERCLA/EPCRA for livestock systems.
- The Mitigating Air Emissions from Animal Feeding Operations Conference was attended by over 170 paid participants from across the U.S., plus exhibitors. Participants highlighted two aspects of the conference that will be especially helpful in making decisions regarding mitigation technologies.
- Participation for the air quality webcasts was strong, averaging 135 attendees per live broadcast. Viewing of archived webcasts is also strong as the aggregate of all LPELC archived webcasts are accessed over 1100 times per month. Air quality webcast viewers report that their main reasons for participating are for professional development and for providing recommendations to producers, with each viewer influencing an average of 143 producers.
- A conference (Dairy Housing of the Future) was held in Sioux Falls, SD on September 10-11, 2008. The conference was attended by 160 participants from 25 states.
- Attendees of the multi-state ventilation workshops were either producing or had influence on well over 20,000,000 million pigs or a fifth of the total pork production in the US. Overall impact indicated by the attendees was \$1000 to \$5000 per year return.

Best sellers MWPS Handbooks Top 5:

- **Residential Onsite Wastewater (CIDWT)**
717 copies sold
- **House Planning (MWPS-16)**
324 copies sold
- **Horse Facilities Handbook (MWPS-60)**
317 copies sold
- **Wiring Handbook (MWPS-28)**
221 copies sold
- **Structures and Environment (MWPS-1)**
222 copies sold

A meeting date for next year was discussed. Meeting dates suggested was May 10th and 11th of 2010, with a tentative location at Omaha, Nebraska. A motion to adjourn the meeting was made by Don Jones and seconded by Brian Holmes. Motion carried.

At 12:10 PM, the meeting was adjourned.



Signed

Steve Pohl
NCCC9 Secretary



Signed

Rick Stowell
NCCC9 Chair



Signed

Gerald A. Miller
NCCC9 Administrative Advisor

Appendix A

Summary of MWPS Activities

Accomplishments as a result of 2008 NCCC-9 meeting:

The following books are new:

- Private Water Systems (MWPS-14)
- Farm Machinery & Labor Sharing (NCFMEC-21)
- CIDWT, 2nd Edition

New adopted books:

From Illinois

- Agricultural Ventilation Fans: IL-09

From ISU

- Mitigating Air Emissions from Animal Feeding Operations: MWPS-AIR
- Book on CD

Books currently in production:

- Structures and Environment Handbook, Book #1,
– Currently on hold
- Structures and Environment Handbook, Book #2.
– Currently on hold
- Dairy Freestall: Housing and Equipment
– Several chapters need to be written
- CIDWT Installers Manual
– Chapters being edited, due out August 2009

Future projects:

- Farm Machinery Lease: NCFMEC-22
– Will be available free as a download. Text supplied by William Edwards, Economics Dept at ISU
- Farm Machinery Lease Manual: NCFMEC-23
– Manual being prepared by The North Central Farm Management Committee
- Wiring Handbook
– Should be updated for newest code. LaVerne Stetson as a possible author

Best sellers Top 5:

- **Residential Onsite Wastewater (CIDWT)**
717 copies sold
- **House Planning (MWPS-16)**
324 copies sold
- **Horse Facilities Handbook (MWPS-60)**
317 copies sold
- **Wiring Handbook (MWPS-28)**
221 copies sold
- **Structures and Environment (MWPS-1)**
222 copies sold

Best sellers (6-11)

- **Sheep Housing & Equipment (MWPS-3)**
199 copies sold
- **Private Water Systems (MWPS-14 – new)**
193 copies sold
- **Raising Dairy Replacements (RDR)**
177 copies sold
- **Beef Housing and Equipment Handbook (MWPS-6)**
150 copies sold
- **Grain Drying/Handling/Storage (MWPS-13)**
142 copies sold
- **Dairy Freestall Housing (MWPS-7)**
139 copies sold, with 1260 copies in stock

Top 3 best adopted books:

- **Post-Frame Building Handbook (NRAES-1)**
62+ copies sold
- **Corrals for Handling Beef Cattle (CAN-723)**
56 copies sold
- **Modern Corral Design (OKE-938)**
55 copies sold

Debt repayment:

- Maximum Debt: August 2006 – (\$191,026)
- End of FY 07: (\$132,166)
- End of FY 08: (\$111,323)
- As of March 09: (\$93,070)
- Since September 1, 2006
 - 8 months with loss
 - 23 months with profit

Discussion followed on the length of chapters in the handbooks. Other ideas for new handbooks included the distribution of Wine Grape Production Guide for Eastern North American. It was indicated by Rick Stowell that EPRCA reporting caused a lot of work to get information out. The reporting was not well publicized and caused lots of confusion. It was suggested that a letter be formulated from this committee to EPA that this committee is available to help educate. Don Jones suggested several handbooks. They are currently working on a cow-calf Beef handbook, with authors from Purdue. The handbook is targeted towards the eastern corn-belt and producers having 20 to 50 cows. Another suggestion was for writing a publication on waste handling and regulations for septic tank haulers. Joe Zulovich suggested a revamped poultry handbook that could be used by people who have acreages.

Appendix B State Reports

Illinois Report

Reporting Scientist: Ted Funk

- Outcomes and impacts of multi-state extension engineering programs that were recently completed or are ongoing (report may include key efforts/activities as background).
 - EPCRA reporting. NE, IA, WI and IL worked together to assist state emergency management agency personnel to design forms and calculations that producers with CAFOs could use to report continuous emissions of ammonia and hydrogen sulfide. This was in response to EPA's recent and final rule on CERCLA/EPCRA for livestock systems.

- Extension engineers who have been hired [or retired, fired, re-wired, etc.] in the past year. NONE

- Opportunities for planned or potential collaboration in multi-state programming as identified by extension engineers in your organization.
 - Residential housing. There is a widening need for energy programming in existing housing, the audiences including homeowners, contractors, realtors, lenders, and others. It is believed that, with the currently depressed new-housing market, remodeling activities will be strong. eXtension has a home energy Community of Practice, a group that is short on engineers. Major topics are energy retrofitting, and the connection between energy conservation and indoor air quality.
 - Biomass energy systems, establish baseline technology for biomass supply chain for "bridge markets" such as small and large scale direct combustion and gasification of solid biomass fuels.
 - Illinois has new composting regulations, and UI Extension has created a new Manure Share website (<http://web.extension.uiuc.edu/manureshare/>); we expect an increased interest in composting of manure, and a regional opportunity for information on that topic.
 - EPCRA and other regulatory system reporting guidance. Federal agencies continue to generate regulations, with no supporting funds or structure for outreach. Extension needs to be in the discussions, to perhaps generate the informational materials, provide the structure for outreach, and supply the contact network, if (and only if) funding can be obtained from the agencies.
 - Structures – ag structures loads updates and codes implementation.
 - Structures – MWPS-1 is still in demand for projects in developing nations, and the new edition could have a substantial market.

- Newly implemented or significant uses of MWPS materials.
 - LPES is used as the training and resource manual for Illinois state-mandated Certified Livestock Manager Training program, having an audience of about 1,000 producers, consultants, students and others. Even with the somewhat saturated market in Illinois since the LPES manual was first published, we continue to sell 25-30 hard-copy manuals and 15 CD's per year.
 - The House Handbook, MWPS-16, is used as a text in the Technical Systems Management class on residential housing, which enrolls about 25-30 students per year.
 - We continue to promote the Horse Facilities Handbook, MWPS-60, as our involvement in horse management Extension programs increases.
 - The primary livestock manure management plans effort in Illinois, IMMP (www.immp.uiuc.edu), includes references to MWPS publications in its Resources section, and incorporates tables from MWPS-18 section 1, Manure Characteristics.
 - U of I Extension circulates to all county offices and regional teams the newsletters from MWPS featuring new products.

Iowa

Iowa State University Report – Jay Harmon

i) Outcomes and Impacts

a. Harmon

- i. Using the Community Assessment Model (CAM) for siting swine facilities, site locations for 27 producers with an approximate value of \$24M were examined and feedback given to the producer to reduce the possibility of nuisance odor lawsuits. Proper siting by far has the largest impact on reducing community air quality concerns and keeping livestock production viable.
- ii. Odor and air quality impacts on agricultural communities have been reduced by working with swine producers before facilities are constructed. Location of the proper site and the inclusion of mitigating technologies improves the economic viability of farms by reducing the potential of lawsuits, improves neighbor relations, and reduces emissions from livestock operations. Iowa is number one in swine production, producing approximately 25 percent of the nation's pork.
- iii. In an effort with NE, MN, and SD, educated over 100 swine vets on ventilation, energy and emergency procedure issues. These vets will multiply that initial effort and translate it to a large segment of the Iowa swine industry.
- iv. Served as a resource for the Iowa General Assembly on odor issues and helped to develop a procedure for siting new facilities which was included in a bill, but went unfunded.
- v. Developed energy estimate tools during sabbatical which have been used to develop energy extension programming for producers. These illustrations could help to reduce swine production energy usage from 10 to 25%.

b. Glanville

- i. Developed video and PowerPoint training materials for livestock producers on emergency livestock mortality disposal planning. These educational materials were used as part of the program for 80 Manure Applicator Certification Training Meetings held throughout Iowa during January and February of '08. The information reached more than 1400 livestock producers attending these meetings. Post-training surveys of those attending the meetings showed that 96% of attendees rated the mortality disposal training materials "excellent" or "good," and 37% indicated that, as a result of the training, they planned to develop and implement a mortality management plan for their operations. Of 170 post-training survey comments regarding future plans, 21 responses were relevant to composting of mortalities and manure, making this topic one of the most frequently-requested topics for additional training or information in the future.

c. Hanna

- i. Presented research on cleaning out combines to 264 growers at Canada's Outdoor Farm Show in Woodstock, Ontario at the request of the Ontario Seed Growers Association. Identity-preserved grain production (such as low-linoleic soybeans, organic, and food-grade grain) generates value-added profits for growers.
- ii. Within the Iowa Learning Farm (ILF) project 429 farmers and crop professionals were shown hands-on information about no-till, strip-till and other conservation equipment issues at five summer field days across the state and a winter ILF project meeting. Because of wet soil conditions during the 2008 early growing season, prior research done on tillage effects with flooded soils was shown to 308 crop professionals at the statewide Integrated Crop Management Conference.

d. Helmers

- i. As part of the Iowa Learning Farm project we are conducting evaluations of our extension programming. Evaluations for 2008 are currently being summarized but the information below highlights evaluations summarized in 2008 from activities in 2007.
 1. Two-week and six-month evaluations from Iowa Learning Farm Field Days in 2007 have been completed by the Iowa Learning Farm project evaluator on the 126 individuals that completed comment cards at the field days.

2. The two-week evaluations had a response rate of 41% to the mailed questionnaires, and the six-month evaluation had a 49% response rate.
 3. From the evaluations, 61% at two-weeks and 51% at six-months indicated that they planned to increase the use of surface residue management (no-till or strip-till) on some of their acres in 2008.
 4. At the six-month evaluation the average number of acres per respondent who said they were putting more acres into no-till or strip-till for 2008 was 289 acres.
 5. At two-weeks, 16% of the respondents indicated they discussed using no-till or strip-till with their landowners and this number increased to 23% at the six-month evaluation.
 6. Also, 51% and 57% of the respondents at two-weeks and six-months, respectively, indicated that they discussed conservation ideas with other farmers in their areas.
- ii. The following information summarizes evaluations for 2008 Drainage Design Workshops conducted with the Area Agricultural Engineering Extension Specialists.
1. Those reporting influenced drainage decisions on approximately 55,200 acres.
 2. Participants indicated an average savings of \$0.23 per acre managed and/or operated. The overall average gain for the three workshops was reported as over \$230 per participant.
 3. Ninety-eight percent of participants reported that the presenters were prepared and knowledgeable in providing the information.
 4. Ninety-four percent indicated that the information presented across all topics in the workshop was good and useful.
 5. Thirty-six percent of the participants reported that they will plan and design their own drainage project as a result of the workshop, whereas 12 percent indicated that they will choose a drainage contractor as a result of this training.

ii) Extension Engineers -

- a. No changes – NE Iowa FS position remains open.
- b. May be hiring one for energy grant work.

iii) Opportunities for multi-state efforts

- a. Continuing efforts on ventilation education with MN, NE, SD
- b. Possible air quality collaboration
- c. Possible energy collaboration

iv) Significant MWPS uses

- a. Teaching TSM class “Animal Production Systems” MWPS-1
- b. Assist in teaching master equine manager program – uses MWPS-60

Minnesota Report and Statement

May 10, 2009

Positions:

John Shutske, former UMN Extension Farm Safety and Health Specialist, moved to Wisconsin Extension Administration in 2008. Part of his salary (which is not controlled by the Department) is being used to pay a P&A person to continue some of his work (Katherine Waters). Although Katherine's office is physically in the BAE Building, she is considered to be an Extension employee rather than a tenure-track Departmental faculty member like John was, so we assume that the position is lost from the Department.

Bill Wilcke, Extension Crop Post-Harvest Technology Specialist, continues to coordinate the North Central Region Sustainable Ag Research and Education (NCR-SARE) program at 60% time. Bill jokes that he has a 60:40 split – 60 hours per week for NCR-SARE and 40 hours per week for UMN.

Jerry Wright, Extension Irrigation Specialist, is the Interim Head at the West Central Research and Outreach Center at Morris MN.

Jim Boedicker, ag engineer at the North Central Research and Outreach Center in Grand Rapids MN, has retired.

Phil Goodrich, a faculty member in the Department who did not have an official Extension appointment, but who did some outreach work primarily on anaerobic digestion of manure, has officially retired. There has been some internal discussion about his position, but there has not been any official word from the College about the future of the position.

Verlyn Johnson, who has provided technical support in electronics and manure management, and Katherine Younie, who has provided secretarial support to the Department Head and to our student programs, both plan to retire by the end of this fiscal year (June 30, 2009). There will be a retirement event for them on May 29, and there have been some discussions, but no official announcements, about ways to continue their work.

Deborah Hansen, a computer support person in the Department who had recently moved to a College position, passed away unexpectedly on April 5, 2009. She left the Department soon after departmental computer support positions were taken over by the College. The Department now has a College-employed computer support person who has an office in the BAE Building.

Jonathan Chaplin, a teaching and research faculty member in the Department, primarily in the machinery area, received two teaching awards and just received word that he will be promoted to full professor this year.

Gary Sands, Extension and research faculty member in the Department, primarily in drainage – a controversial topic in MN, received a community impact award.

The merger with Biobased Products is continuing to go forward and two faculty members from the Biobased Products Department, Sangwon Suh and Timothy Smith and their grad students, have moved into the BAE Building.

Searches are proceeding for two Departmental positions. A verbal offer has been extended to a person who is working on biocatalysis. The search for a bioprocessing engineer, headed by Kevin Janni, is also proceeding towards a conclusion and the committee will suggest a finalist soon.

The Department needs to plan for a 6% budget cut for next year. This is not as bad as it could have been, but it will be a challenge for the Department to meet the cut.

Greg Cuomo, a person who had experience as head of a couple of different outlying UMN Experiment Stations, was named the Ag and Natural Resource Program Leader for Extension in the College of Food, Agricultural and Natural Resources Sciences (CFANS). One of his charges is to bring together people who worked in agriculture and those who worked with natural resources.

At least one county in MN has decided not to have a county Extension program in the future. The county will receive some Extension support from Regional Extension Educators.

Cooperation with Departments in other states:

Larry Jacobson is leading a multi-state effort to redesign swine barns to improve energy efficiency.

Bill Wilcke has been participating from a distance in the discussions to develop an ASABE Standard on conducting on-farm energy audits. This effort is expected to lead to future cooperation with other Departments. Voting for the standard is currently underway.

Nebraska Rick Stowell

The Air Quality Education in Animal Agriculture (AQEAA) project [leadership provided through NE, LA, PA, and MN; numerous other states involved in developing educational content, including North-Central Region states of KS, SD, IA, IN, IL, OH, and MI]

This NRI [now AFRI]-funded integrated project had its origins from NCR-9 discussions of educational needs of the livestock industry. During the past year, the project facilitated the initial and continuing development of the Air Quality web section of the Animal Manure Management eXtension website <http://www.extension.org/pages/Air_Quality_in_Animal_Agriculture>. The Air Quality web section of the Animal Manure Management eXtension website is growing as a source of science-based information and educational resources on air quality matters for animal agriculture.

The project co-sponsored a national conference entitled "Mitigating Air Emissions from Animal Feeding Operations", which was held in Des Moines, IA, May 19-21, 2008. This conference included 52 presentations that summarized mitigation systems and their applicability, limitations, and costs. A book of conference proceedings was produced, which is distributed through MWPS. One-page technology summaries are being disseminated in a searchable electronic format within the Animal Manure Management eXtension website. The Mitigating Air Emissions from Animal Feeding Operations Conference was attended by over 170 paid participants from across the U.S., plus exhibitors. Participants highlighted two aspects of the conference that will be especially helpful in making decisions regarding mitigation technologies:

- Having cost [economic] information present in every presentation and paper; and
- Providing one-page technology summaries available for each technology presented.

Five air quality webcasts (web-based seminars) were produced during the project year and are viewable on-demand at the Animal Manure Management eXtension website:

- 'Ammonia, the Air-Water Interface';

- 'Federal Air Quality Regulations and Update on the National Air Emissions Monitoring Study';
- 'Hydrogen Sulfide, How Serious an Outdoor Air Quality Concern';
- 'Feeding Strategies to Reduce Animal Air Emissions'; and
- 'Ammonia and Particulate Emissions from Open Cattle Feedyards'.

Participation for the air quality webcasts was strong, averaging 135 attendees per live broadcast. Viewing of archived webcasts is also strong as the aggregate of all LPELC archived webcasts are accessed over 1100 times per month. Air quality webcast viewers report that their main reasons for participating are for professional development and for providing recommendations to producers, with each viewer influencing an average of 143 producers.

The first of six air quality issues videos was produced on Ammonia. The project is considering potential for hardcopy DVDs to be marketed through MWPS.

EPCRA Reporting [NE, WI, IA, KS, MN, MI, IL, and TX]:

Early in 2009, a page on the AQEAA Air Quality web site was developed to address US EPA's release of a final rule that clarified required reporting of air emissions under the Emergency Response and Community Right-to-Know Act (EPCRA). This educational effort involved communication and sharing of resources, especially via NCCC-009. During the month of January 2009, the web page was the second most visited page on the entire eXtension system. Several thousand large CAFOs (concentrated animal feeding operations) across the U.S. were potentially impacted by this ruling, and initial indications are that a significant number of these operations were getting access to information via the Air Quality web site.

Ventilation Workshops [SD, NE, IA and MN]

Add to info reported by other states...

As an offshoot to collaborative effort on these workshops, the four-state group developed a proposal and received \$30k in funding from the National Pork Board (via MN Pork Producers Assoc.) to develop a 'Greener Pig Barn'. The anticipated outcomes are design recommendations that will produce substantial reductions in the energy consumption and environmental footprint of pork production.

Another proposal was developed by this team for \$70k in funding to construct and equip a new mobile ventilation laboratory and associated educational resources. The intent was to demonstrate management of environmental control systems for energy conservation, reduced air emissions, and enhanced animal health. This proposal was not funded by the National Pork Board, but is being revised for future funding opportunities.

Other NE multi-state collaborations and opportunities for NCCC-009 collaboration (partial listing):

Heartland Water Quality Program (NE, IA, KS and MO) – Tom Franti and Rick Koelsch
Educational efforts include the development of regional publications, which could potentially be [developed and] distributed via MWPS.

Vegetative Treatment Systems [IA, NE, KS and SD] – Chris Henry

Conducting field research at sites across the four states and providing associated demonstration for livestock producers, and those in educational, advisory, design, and regulatory positions.

Bioenergy: John Hay and others

Several educational efforts developing in this growing topic area. Likely are several areas to collaborate on a multi-state basis.

North Dakota

May 11, 2009

In a letter sent to NDSU Extension Service County Chairs, Tom Scherer and Ken Hellevang provided an MWPS publication listing, a reminder of the wealth of information in the MWPS handbooks that are in each county office, and a listing of the extensive engineering assistance available on the Agricultural and Biosystems Engineering web site. Selected MWPS publications were prominently displayed at the Big Iron farm show held in September in Fargo.

Ken Hellevang provided extensive educational assistance to the Iowa State University Extension Service related to flood recovery during the summer of 2008. MWPS-50 Living on Acreages was incorporated into the ND Extension issues based programming effort dealing with rural living. John Nowatzki leads the eXtension geospatial education effort.

Tom Scherer was part of the author team for revision of MWPS-14 Private Water Systems Handbook. The ND Extension Ag/NR program leader purchased 60 copies to be distributed to every Extension office in North Dakota. A short article about MWPS-14 was mentioned in a newsletter sent to all soil conservation districts (SCD) offices, all NRCS district offices and many ND government agencies.

Carl Pedersen is part of a multi-state group submitting a proposal for SARE funding to complete multi-state educational training for extension staff related to solar and small wind energy. Ken is part of a multi-state group submitting a proposal for SARE funding to identify regional expertise in agricultural energy efficiency and to provide education on agricultural energy efficiency likely through monthly web seminars.

North Dakota State University (NDSU) is in the process of hiring two Engineering Extension engineers to work with businesses. One will be in Dickinson and the other will be in Minot. NDSU has been trying to hire a bio-process engineer to work at the ARS station in Mandan. This person would have a part Extension appointment through the Ag and Biosystems Engineering department.

NCCC-009 needs to either narrow its focus to a specific topic such as structures or broaden its focus to include all Ag & Biosystems engineering. Their needs to be enough participants related to a topic to effectively plan regional cooperation. If travel cost do not permit meeting face-to-face, another option may be for the meeting to be held electronically using Adobe Connect or some other Internet based meeting software. For example, those interested in energy efficiency could meet in an Adobe Connect meeting, and then report to the entire group at another Internet session.

South Dakota

Steve Pohl

Outcomes and impacts of multi-state extension engineering programs that were recently completed or are on-going:

- Participated in a multi-state project (KS, MS, MN, and SD) in the development and research of the low profile cross ventilated (LPCV) dairy freestall barn. This technology has been widely accepted as the footprint for dairies in the upper Midwest. A conference (Dairy Housing of the Future) was held in Sioux Falls, SD on September 10-11, 2008. The conference was attended by 160 participants from 25 states.

- The MinnKota (ND, MN, and SD) Agri-builders and Equipment Association has given university personnel the opportunity to interact with industry and engineering consultants with current updated information. Multi-state (MN, ND, and SD) have co-organized workshops and tours for this group since 1989.
- Multi-state ventilation workshops (Managing Your Unseen Employee: The Ventilation System) have been held in SD, NE, IA, MN, KS, MS and Ill. Over the six year period since the inception of the program, more than 75 workshops have been held and we have had over 1,000 participants in attendance which included swine producers, industry personnel and veterinarians. These attendees were either producing or had influence on well over 20,000,000 million pigs or a fifth of the total pork production in the US. Overall impact indicated by the attendees was \$1000 to \$5000 per year return. One example of success of the program in 2008 is that a SD producer reduced his energy bill from \$97,000 to \$40,000 as result of information from these workshops.
- Developing alternate technologies for manure handling systems concerning feedlots. One technology that is currently under study (\$263,000 grant) is the use of vegetative treatment areas for gray water from these systems instead of storage ponds currently used. We are currently working on four AFO sites across South Dakota to test this technology. We are working with the county educators as part of this grant. Tours were conducted on all four sites. Attendees included producers, SD DENR, Farm Bureau, and NRCS personnel.
- A multi-state (IA, NE, MN and SD) 1 million dollar grant is currently being conducted for confined animal feeding operations (> 1000 animal units) has resulted in several sites being built across the Midwest. One site involves a family run 4000 head operation, which will have to shut down if a manure management plan is not implemented. A feedlot of this size would cost over \$1,000,000 dollars and South Dakota will lose 4,000 head of finishing capacity. Construction of one 1800 head site in SD was completed in 2008 and will be monitored starting in 2009. A third 1800 site located near Morris Minnesota is currently being monitored. Tours were conducted at the completed SD site and MN site.
- Developing engineering procedures for filtering boar studs and breeding and gestation facilities. The purpose of the air filtration systems is preventing the entrance of the PRRS virus which has an estimated negative impact of 700 million dollars for the swine industry. Using bio-filters to mitigate the aerosol transfer of the PRRSV from swine facilities is currently being evaluated.
- Air quality research included an investigation on the effect of a shelterbelt has on mitigating gas and odor emissions from a swine barn and emissions from a bed pack monosloped cattle facility. Presentations were given to the South Dakota Pork Producer Council and Minn-Kota group.

Extension engineers who have been hired in the past year.

- Dr. Erin Cortus will be joining our staff at the beginning of June. Dr. Cortus was hired as an environmental quality engineer with emphasis with manure management systems.
- Dr. Chris Hay will be joining our staff at the end of May. Dr. Hay was hired as a water quantity and quality management engineer.

Opportunities for planned or potential collaboration in multi-state programming as identify by extension engineers in your organization.

- Continued programming efforts will continue alternative manure handling systems including vegetated treatment systems. Several sites are currently being monitored for model validation. Once model is validated several workshops for engineering consultants and policy makers will be conducted.
- Multi-state ventilation workshops will continue to be conducted with an emphasis on advanced ventilation workshops. Training of building company personnel is currently being considered.

- The environmental footprint including emissions and energy use in livestock facilities is being evaluated. The next generation of swine facilities is currently being designed.

Newly implemental or significant uses of MWPS materials.

- Utilizing MWPS-1 for Rural Structures class. Need an updated version.

Wisconsin Report

May 11, 2009

1. Outcomes and Impacts of multi-state extension engineering program (include efforts/activities)
 - a. The following chapter revisions for MWPS-7 have been completed by authors and sent to MWPS:
 - Chapter 4. Milking Herd Facilities
 - Chapter 5. Milking Center
 - Chapter 8. Manure and Effluent Management
 - Chapter 9. Feeding Facilities
 - b. The following chapter revisions are being worked on by the authors:
 - Chapter 3. Replacement Housing
 - Chapter 6. Special Handling and Treatment Facilities
 - c. The following chapter has been drafted by R. Graves and reviewed by J. Zulovich. Two other reviewers have not responded.
 - Chapter 2. Total Dairy Facilities
 - d. No authors were identified for the remaining chapters. However, Chapter 1 was a data summary chapter. It wouldn't take much to revise it once the other chapters are completed.

2. Recent change of status of Extension Engineers

Mathew Digman has been hired to fill the Machinery Extension Specialist position vacated by Ron Schuler's retirement. He will start June 1, 2009 upon completion of his PHD degree requirements. He is currently employed by the US Dairy Forage Research Center at Madison, WI.

A **New Position** has been approved to fill. This is a Research/Outreach position in the area of manure processing. A Position Vacancy Listing is being developed and should be posted soon.

The **National AgrAbility Program** has been moved from Wisconsin to Purdue. Wisconsin positions are being phased out. The State Agri-Ability program remains and is strong.

3. Opportunities for planned or potential collaboration in multi-state programming.

Planned Collaborations:

4-States Dairy Management extension programming-Annual Conference held in Dubuque, IA (WI, IL, MN, IA)

Extension Professional Development -

Water Quality for Small- and Medium-sized Livestock Farms

(10 states cooperating)

July 22, 6 p.m. and July 23, 2009

Urbandale, Iowa (Des Moines area)

Potential Collaborations:

Recycling of ag plastics. MN and WI have some activity in this arena.

The failure of ag buildings in the region needs to be addressed. State code development agencies and insurance companies need to be involved with Agricultural Engineers in helping to resolve the problems.

Several factors including USDA rules related to dead and down animals have resulted in animals not going into the conventional rendering channels. We may want to develop procedures and recommendations for proper disposal of these animals to avoid disease transfer, water quality degradation and high cost to the producer.

4. Newly implemented or significant use of MidWest Plan Service Publications

None