

# LEM NEWS



Livestock Environmental Management Newsletter Volume 5, Issue 1. January 2016.

*"The New Year stands before us, like a chapter in a book, waiting to be written.  
We can help write that story by setting goals." – Melody Beattie*

## Greetings!

It's the time of year when I have a couple quiet office days to reflect on the 300+ past days and what was accomplished by the nutrient management and livestock environmental management programs. You'll read and see in the pages that follow the variety of things we've been busy with. It's also the time of year when I get to plan what the next 300+ days will (hopefully) entail. Though my program goals have yet to be completed, I assure you that we will be busy. From planned field trials, to nutrient management youth education, to national workgroup projects, we will be spreading manure management information throughout North Dakota and parts of the US. As always, you can catch me anytime via email ([mary.berg@ndsu.edu](mailto:mary.berg@ndsu.edu)) or by phone (701.652.2951). Here's to continued successes in 2016! —*Mary Berg*

## Kids and Compost... From the Feedlot to the Garden

With over 500 permitted animal feeding operations in ND, the potential fertilizer value from nutrients being produced by livestock is noteworthy.

The American consumer is three to four generations removed from agriculture, meaning the connection to where food comes from and how it is produced is limited and at times, unknown.

During the January 2015 event called Ag and YOUth held in Jamestown, the common response from youth when asked about livestock manure was "eww, gross" or "it smells bad". The Kids and Compost program began to evolve as a way to make an agriculture connection with youth while demonstrating a nutrient cycle and showing them how an animal's "waste" product is useful.

Grant funds were obtained in 2015  
*(Continued on page 2)*



Youth viewing compost that was made in a tumbler during the Stutsman County project. A special thank you to Wholesale Ag Products in Carrington for donating the new plastic barrels that were used to make the body of the tumbler.

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# Kids and Compost

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from the ND Junior Master Gardener (JMG) program to build compost tumblers for use in Extension programs. Compost tumblers were assembled for Emmons and Stutsman counties. The project, Kids and Compost, became part of a larger program in each county during the summer. A whole farm nutrient cycle program was created including:

- ☑ Feedlot manure and other appropriate materials being turned into compost in a tumbler.
- ☑ Engaging presentation aids and hands-on activities where students learned what manure feels like, smells like, what nutrients it contains, and how manure and compost are used as a fertilizer source or soil amendment.
- ☑ The opportunity to participate in a group project making compost in a small tote.
- ☑ Each student grew their own wheat to take home using compost to show the full cycle of livestock creating nutrients that can be used to produce human food.



Youth comparing their newly planted wheat heads. A special thank you to Coca Cola in Bismarck for donating the bottle planters and cap noses for this project.

A total of 100 students from first through sixth grade participated in the Kids and Compost lesson in two counties during the summer of 2015.

Team members included Mary Berg (NDSU Carrington Research Extension Center), Kelsie Egeland (Emmons County Extension), and Alicia Harstad (Stutsman County Extension). — *Mary Berg*

## Howdy! My name is Uchenna Anele and I'm the "new guy" in town.

I am excited to join the Carrington Research Extension Center as the Animal Scientist. I grew up in Enugu in southeastern Nigeria. I trained in animal sciences in Nigeria earning B.S. and M.S. degrees in Agriculture (animal science major) and Pasture and Range Management, respectively. My Ph.D. was in forage utilization and ruminant nutrition from the University of Bonn, Germany.

Before joining the NDSU CREC, I was a lecturer in the Department of Pasture and Range Management, Federal University of Agriculture, Abeokuta; a postdoctoral research associate at Texas Tech University and a visiting research fellow at Lethbridge Research Center, Agriculture and Agri-Food Canada.

I have done lots of studies including integrated crop/livestock farming systems, forage utilization, ruminant nutrition, greenhouse gas abatement, and evaluation of non-conventional feedstuffs.

Moving forward, I will continue the drylot cow/calf system that the CREC is known for. I will focus on high priority needs of producers in the state. I will also undertake studies like the use of exogenous enzymes to improve fiber digestion of several co-products and crop residues generated in North Dakota; use of pre- and probiotics in the feedlot; and integrated crop/livestock approach to address high salinity soil issues in North Dakota.

I look forward to meeting you in the nearest future. Feel free to drop me an email ([uchenna.anele@nds.edu](mailto:uchenna.anele@nds.edu)) or give me a call (701-652-2951) anytime. — Uche Anele

**The new  
Mortality  
Composting  
video link  
is here!**



<https://www.youtube.com/watch?v=qE1QfgbfjYI>



Uche Anele, Animal Scientist at the NDSU Carrington Research Extension Center.

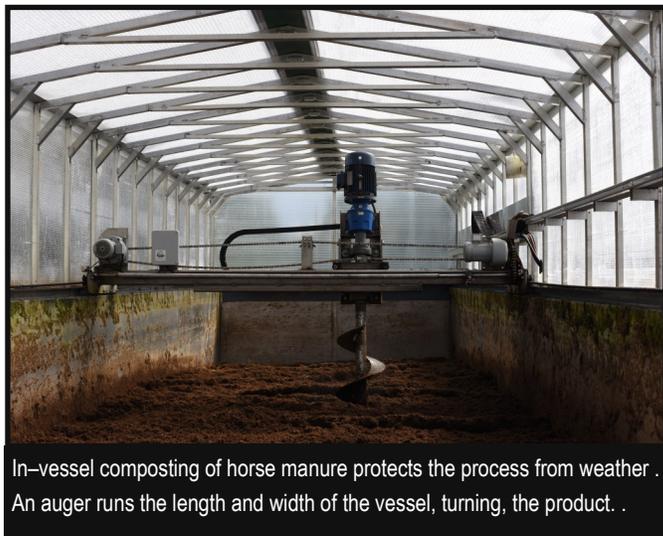
# Advancing Sustainability in Animal Agriculture: Waste to Worth 2

The second “Waste to Worth” (W2W) conference was held on March 31-April 3, 2015 in Seattle, Washington. W2W drew over 275 people from most U.S. states and several countries, including Canada, Australia, Nigeria, and Taiwan.

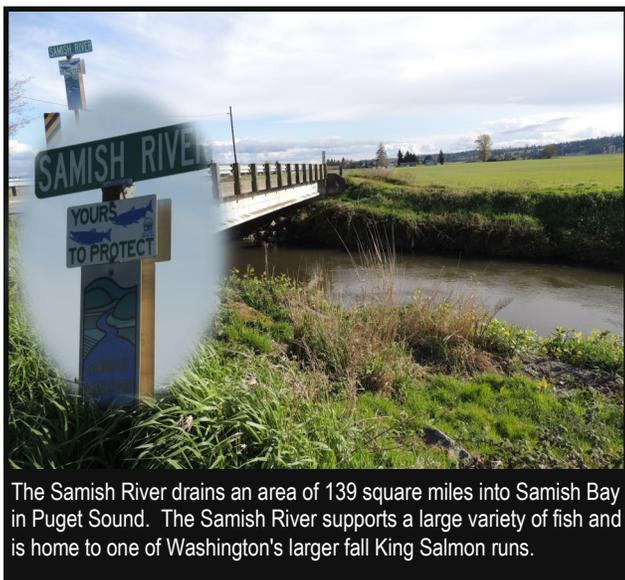
The theme of the conference was “Advancing Sustainability in Animal Agriculture” and the topics presented included grazing management, manure-to-energy technologies such as anaerobic digesters, management of dead animals, and air and water quality topics. During one morning of the conference, attendees were treated to a wide range of perspectives on the “big picture” of sustainability of animal production. The emphasis was on climate change, but the presenters connected the dots between water, energy, economics, and climate and did a skillful job outlining the challenges/opportunities in food animal production.

Drs. Shafiqur Rahman, Paulo Flores and Jasper Teboh along with area Extension specialist Mary Berg and Ward County Extension agent Paige Brummund represented North Dakota State University at W2W. They assisted with various aspects of the conference including membership on the planning committee and assistance during presentations and the tours. They also presented during both the poster and live discussion times.

Some highlights from the academic presentations included the Western Dairy Air Quality Symposium (led by April Leytm with the USDA Agricultural Research Service), another by the Animal Agriculture in a Changing Climate team (led by Liz Whitefield, Washington State University), horse manure management (led by Mike Westendorf, Rutgers University), and a series of sessions on the evolving nature of the phosphorus index. After the conference, the recordings of the phosphorus sessions were organized into a self-study module that was submitted to the Certified Crop Advisors program for 3 continuing education units.



In-vessel composting of horse manure protects the process from weather. An auger runs the length and width of the vessel, turning the product.



The Samish River drains an area of 139 square miles into Samish Bay in Puget Sound. The Samish River supports a large variety of fish and is home to one of Washington's larger fall King Salmon runs.

Several tours were offered as part of the conference. Participants chose between visits to anaerobic digesters, small farms (on a nearby island), shellfish farming and a partnership to reduce nutrient pollution in important shellfish production areas, and a look at large-scale composting. The comments received on the tours were overwhelmingly positive; the only complaint



Off-site tours were a popular option for many attendees.

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# Waste to Worth 2

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was that many participants wished they could have seen the stops on the other tours as well as their own.

Most of the presentations at the conference were recorded and almost all have a proceedings paper published. Those are available by visiting <http://extension.org/73053>.

The first W2W was held in Denver, CO in April, 2013. Plans are being made for a third W2W conference. While all options are currently open, it is likely the event will move eastward to continue the mission of experiencing animal agriculture as a national industry.

The event is a project of the Livestock and Poultry Environmental Learning Center (<http://lpelec.org>) which is a learning network made up of professionals that make or influence environmental decisions on farms.

For more information on the LPELC network or Waste to Worth, contact Jill Heemstra [jheemstra@unl.edu](mailto:jheemstra@unl.edu). — *Jill Heemstra*



NORTH DAKOTA  
DEPARTMENT of HEALTH

## Commentary from the CAFO Corral

Another busy year for the North Dakota Department of Health's Livestock Program is coming to a close. Livestock Program staff members reviewed and permitted two new large concentrated animal feeding operations (CAFOs) and eight new animal feeding operations (AFOs). All ten operations were classified as cattle feedlots.

### Nutrient Management

Livestock Program inspectors have been finding some facilities where the required nutrient tests are not being conducted. Proper nutrient testing is a major component of a facility's nutrient management plan. By following an approved nutrient management plan, the operator of a facility can reduce the amount and cost of commercial fertilizer by being more efficient when spreading manure.

Another item of high priority is dealing with fields that show high phosphorus levels. For more information on this issue, operators can refer to the [North Dakota State University \(NDSU\) Extension document SF882 \(North Dakota Fertilizer Recommendation Tables and Equations\)](#).

The NDDH Livestock Program published a design manual in January of 2005. Section 7.5 of the manual explains the application rates to meet nutrient requirements:

1. The manure application rate shall not exceed the recommendations for nitrogen and phosphorous based on either the North Dakota Phosphorous Index (PI), as developed by the Natural Resources Conservation Service (NRCS), or NDSU Extension Service recommendations based on soil testing.

2. The PI allows manure and other sources of nutrients to be applied at rates to meet the nitrogen needs of a crop if the PI rating is low or medium. If the PI is high, it allows manure and other sources of nutrients to be applied at rates to meet the phosphorous removal in the crop biomass. If the PI is very high, it requires that no manure be applied to that field. Manure shall not be applied to fields where the soil test phosphorous exceeds 125 parts per million (ppm) (250 lbs per acre).

3. Manure and other sources of nitrogen must not be applied at rates that exceed:

- The recommended nitrogen application rate during the year of application; or
- The estimated nitrogen removal in harvested plant biomass for legumes during the year of application.

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## Record Keeping

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Starting in 2014 and continuing through the 2015 season, binders have been distributed to operators to help them organize the required paper work needed during an annual inspection. Some facility operators have embraced the new binder system; however, others are still struggling with record keeping. Most facility operators are keeping manure records for the number of application acres, the rate of application, and total volume applied. In addition, most operators have been taking soil samples from fields where manure is applied.

The Livestock Program design manual requires that a CAFO make the following records available for review upon request:

1. Records documenting the visual inspections (Section 6.2.1);
  - a. Weekly inspections of all storm water diversion devices, runoff diversion structures and devices channeling runoff to the manure storage structure;
  - b. Daily inspection of water lines, including drinking water or cooling water lines; and
  - c. Weekly inspections of the manure storage structures noting the level of liquid in the structure as indicated by the depth marker.
2. Weekly records of the depth of the manure and process wastewater in the liquid manure storage structure as indicated by the depth gauge in the storage structure;
3. Records documenting any actions taken to correct deficiencies (Section 6.2.3). Deficiencies not corrected within 30 days must be accompanied by an explanation of the factors preventing immediate correction;
4. Records of mortalities management and practices used (Section 6.4);
5. Records documenting the current design of any manure storage structures, including solids accumulation volume, design treatment volume, total design volume and the approximate number of days of storage capacity;
6. Records of the date, time and estimated volume of any overflow; and
7. Records documenting the land application of manure (Section 7.7).

Maintaining proper records is a vital part of operating an animal facility. Organized records help an operator comply with the facility permit, better respond to complaints or impacts, and address issues created by extreme weather events.

For more information about nutrient management and/or record keeping, please contact the Livestock Program at 701.328.5210. — *Brady Espe, ND Dept of Health Livestock Program*

## Mary Berg Named Communicator of the Year

The North Dakota chapter of the Association for Communication Excellence and North Dakota State University's Agriculture Communication Department have selected Mary Berg as the 2015 Communicator of the Year.

The Communicator of the Year Award recognizes an individual who displays exceptional expertise and professionalism in delivering educational programs and information to the public through several types of media.



Mary Berg was named Communicator of the Year at the NDSU Fall Extension and Research Conference in October.

Berg joined NDSU Extension in 2012. And, as you know, she helps leads the livestock environmental management team, hosting producer workshops and speaking at educational programs. Mary has authored or co-authored several publications and updated some older publications.

Mary produces videos that have been posted on YouTube, and communicates with her audiences through news releases and social media such as Facebook and Twitter.

She also was instrumental in the development and continued success of Center Points, an information-sharing page on the Carrington REC's website.

Berg grew up on a farm near Driscoll. She earned a bachelor's degree in animal science from NDSU in 2010 and a master's degree in animal science from the University of Wisconsin-Madison in 2012.

Mary received the award in October at the joint NDSU Extension and Research Extension Center conference in Bismarck.

Congratulations, Mary! — *Linda Schuster*

# Feedlot Tour features rain-soaked southwestern ND

## *Day-long tour includes a diverse range of feeding facilities*

Producers in North Dakota are turning to feedlots for increasingly diverse purposes. Whether it is for backgrounding heifers, developing seedstock or finishing commercial cattle for shipment to packers in states further south, adding a feedlot enterprise to the ranch can be intimidating.

The three producers featured on the NDSA's 2015 Feedlot Tour agreed that learning from the experience of others who have taken on the task of building fully-contained, environmentally- friendly feedlot facilities is key.

The 13th edition of the tour showcased the feeding operations at Ottmar Feedyard near Elgin, Maher Angus Ranch near Morrystown, S.D., and Roth Feedyard near New Leipzig and gave producers the opportunity to learn from their fellow producers' experience. More than 140 tour participants battled the rain-soaked southwestern North Dakota weather on June 16. Although the weather was inclement, those in attendance took advantage of the unique opportunity to watch the three facilities' drainage systems at work. The diverse range of operations featured provided advice for several differing operational goals.

### **Ottmar Feedyard**

Blaine and Linda Ottmar began developing a plan to enhance their existing feeding facility to carve out an added place for their two sons and daughters-in-law, Chad and Joy and Lance and Shawna, on the ranch. "We started thinking about this four or five years ago," Blaine said. "When we decided to start feeding cattle, we had fences falling down and needed to do a lot of work to our facility."

Today, the Ottmars background and finish cattle in their 2,800-head yard. The family turned to NDSA Environmental Services Director Scott Ressler and K2S Engineering to navigate the rebuilding process. The yard was permitted in 2014 and is built to last with continuous-poured concrete banks and heavy-use pads, large pens, continuous steel and cable perimeter fencing and energy-free water tanks. Blaine said the facility is built to ease everyday processes, such as sorting and processing with an enclosed processing facility that includes a hydraulic chute and a surplus water storage building and liquid feed system on site. By utilizing the natural layout of the feedyard's topography, the Ottmars are able to store surplus water from two wells in two 7,500-gallon tanks that are fed by a three-phase electrical motor. The tanks are housed in a storage facility that doubles as a shop and feed the feedlot's energy-free water tanks with two 2-inch lines. Blaine said the tanks ease the use of liquid livestock supplements in the feeding process and provide good water pressure throughout the yard. "Even in our highest water usage situations, the well has time to refill," Blaine said. "During the day it probably drew down two feet on each storage tank, but the system always provides good pressure."

Blaine stressed the importance of making thoroughly researched decisions when choosing everything from fencing styles to watering systems.

### **Maher Angus Ranch**

A mid-day break in the rain greeted visitors at the Maher Angus Ranch stop. Dan and Gloria Maher develop bulls with their son Casey, his wife Gina and their children at the Morrystown, S.D., facility. Dan's father began work on the ranch in 1917. He started the family's registered Angus herd in the late 1970s and continues to develop registered Angus bulls today. The Mahers point to the health of their animals as the primary reason for expanding their feedlot facility to today's 999-head capacity.

"We got to thinking that, for the health of the bulls, we needed to do something to get more pen space and make our feeding opera-



NDSA Feedlot Tour attendees walk through the feeding operation at the Maher Angus Ranch near Morrystown, S.D.

*(Continued on page 7)*

# Feedlot Tour

(Continued from page 6)

tion more efficient,” Casey said. The Mahers hold their annual production sale in February and hold the bulls until the spring months for their customers. “With a February sale, you’re just going to have to keep your bulls,” Casey said. “That was another big reason for the feedlot.”

The Mahers built the facility in 2012 as an addition to their existing calving barns in their yard. The second phase of the project includes 200-head isolation pens, and four 100-head pens make up the third phase. The lot features continuous-poured concrete bunks and heavy-use pads, dual-purpose alleys, cable feedlot fence and energy-free water tanks. The site’s newly constructed processing facilities include double alleys and a hydraulic chute. New facilities often mean new processes. For Maher, adopting 12-foot heavy-use pads at the feeding bunk provided a challenge. “How to scrape, when to scrape and scraping as often as you can was a bit of a learning curve for us,” Maher said.

Integrating new facilities into an existing operation takes time, Maher said. “During construction, you just have to devote two hours in the morning to questions from your contractors,” Maher said. “Every day, I got up and answered questions. If you do that you can be sure that what you’re building fits your operation. It’s overwhelming to take on, but in the end it’s worth it.”

## Roth Feedyard

The rain returned for the final stop on the tour. Lincoln and Beth Roth operate Roth Feedyard, a backgrounding feedlot near New Leipzig. As tour participants faced the rain, they got to see Roth’s essential drainage system at work. Roths improved their lot’s drainage by utilizing the site’s natural slope, Lincoln said. “If you walk out to the holding pond, especially today, you can see the water moving right where it should,” Lincoln told the crowd.

Permitted in 2014, the 999-head facility includes continuous-poured concrete bunks and heavy-use pads, continuous steel feedlot fence, rear cowboy alleys in the pens and concrete water tanks. “It’s a heavily built facility,” Lincoln said.

He recommended producers utilize resources like the NDSA’s Environmental Services Program and Feedlot Tour to garner knowledge and advice from producers who have taken on similar projects.

Ressler echoed the sentiment: “I’m always happy to see the amount of knowledge shared during the Feedlot Tour,” he said. “We are always fortunate to have producers like the Ottmars, Mahers and Roths who are willing to open their operations to our tour and help out producers who are looking to improve their facilities.” — *North Dakota Stockmen’s Association*

# NDSU Extension Equipment Demonstration Days

Fifty people participated in the NDSU Extension Equipment Demonstration Days held at the Central Grasslands and Hettinger Research Extension Centers this past October. These demo days targeted livestock owners who were interested in seeing how different but similar-functioning equipment compared.

This year’s demonstration day focused on livestock nutrition and nutrients, with displays of forage processors, mixer wagons and manure spreaders. Proper

forage sampling technique was also demonstrated by local Extension agents, followed by an education and research report time with an NDSU Extension specialist. All the equipment was demonstrated using feedstuffs and manure available at each facility.

A special thank you to our program sponsors including: Highline Manufacturing Ltd., Haugen Sales and Leasing, Haybuster, Purina Animal Nutrition, iHeartMedia, and Farm and Ranch Guide.—*Mary Berg*



Producers inspect TMR infused with colorful candies, looking for uniformity.



LaMoure County Extension Agent Julianne Racine demonstrates proper bale core sampling.

# Nutrient Management Day held August 18

Crop producers, livestock owners, and other interested nutrient management stakeholders gathered at the Carrington Research Extension Center on August 18 to see live demonstrations, learn about the corn manure nitrogen calculator and compare growing plants fertilized with manure, compost or common commercial fertilizers.

Lindsay Maddock, Wells County Extension agent, started the morning discussing the process of composting livestock mortalities. Participants had the opportunity to observe the composting process at different decomposition levels.

Mary Berg, CREC area Extension specialist, followed with a live demonstration of how to compost beef manure. The process and details of composting were discussed and two compost rows were turned with either a payloader or compost turner. Participants were able to see the difference in final product particle size depending on the turning technique that was used.



Turning a compost row with a payloader is quite effective, but using a commercial compost turner develops a finer, more uniform product, often in less time.

A live manure spreader calibration demonstration ended the morning activities. The sheet calibration method was demonstrated and can be found in detail here: <https://www.ag.ndsu.edu/publications/landing-pages/environment-natural-resources/master>.

Alicia Harstad, Stutsman County Extension agent, kicked off the afternoon by presenting basics behind the NDSU Manure Application Calculator for Corn. This calculator can be found here: <https://www.ag.ndsu.edu/lem/manure-corn-n-p-calculator> and should be used to understand the value of manure as a fertilizer.

Ezra Aberle, CREC research specialist, and Drs. Paulo Flores and Jasper Teboh, both CREC research scientists, lead the afternoon sessions in the field discussing crop production differences when comparing manure, compost, ethanol distiller's byproducts and common commercial fertilizers.

Participants completed an evaluation at the end of the program which indicated a better understanding of mortality composting, composting manure, and how to calibrate a manure spreader. Participants also indicated an increased understanding of how to use the ND Corn Manure Calculator.

A special thank you goes to Megan Minten and Angie Johnson, Extension agents in Griggs and Steele Counties, respectively for assisting with NM Day. Planning is currently underway for Nutrient Management Day 2016. Please look for a date and details in the April LEM News. —Mary Berg

# The Future of What's Left Behind

## Pennsylvania hosts 2015 North American Manure Expo



Acres of demonstration fields showcase manure spreaders at the North American Manure Expo.

The smell of manure, the rumbling of interstate traffic, and the cut straw field lined with rows upon rows of shiny farm equipment were some of the first sights and smells of the 2015 North American Manure Expo. On July 14th and 15th, Chambersburg, Pennsylvania hosted this year's NAME. The turnout was incredible; the grounds were flocked with producers, custom manure applicators, researchers, consultants and government agents. All these folks were there to get the scoop on poop!

The Manure Expo, which launched in 2001, is an annual traveling attraction which brings together an industry trade show, manure technology demonstrations, and educational opportunities. "The success of the Manure Expo weighs on more than the manure," Penn State Extension's Robb Meinen, Co-Chair of this year's Expo, said with a smile. "We rely on quality educators and exhibitor support to ensure each year is better than the last."

Meinen estimates over 2,000 attended this year's Expo. Farm tours offered on July 14 included participants from 23 different states. Many took home t-shirts featuring this year's winning slogan, "Manure Than You Can Handle" on the front and the top ten rejected slogans the back.

In the center of the spectacle was the hardware; all the manure management equipment imaginable - even a state-of-the-art manure injector all the way from Germany. Large tents dotted the perimeter where attendees heard from experts on the economics, safety, best management practices and technological innovations of agricultural manure application. Way out in the distance, but close enough to smell, were the demonstration fields.

Among the educators was Penn State Agriculture and Environmental Center (AEC) director, Matt Royer, who shared his insight on legal liability issues related to manure. The AEC works across the Commonwealth to tackle the region's most challenging water quality problems. Engaging a diverse set of stakeholders is a hallmark of the Center's success.

"Robb Meinen and his crew did a great job planning and putting on a top notch event," said Royer. "We were glad to play a small part."

Meinen notes that although the dust (and the drift) has just settled over Chambersburg, it is not too early to mark your calendars. [Next year's Manure Expo will be held August 3-4, 2016 in London, Ohio.](#) — Maya Yakobi, PSU student for the Penn State Agriculture and Environment Center

**North American  
MANUREXPO**  
Professionalism in Nutrient Management

## NAME congratulates crappy slogan winners

July 31, 2015, Chambersburg, PA – The pressure has lifted. The movement has passed. Once again, we celebrate the successful end of another North American Manure Expo.

But before we close the lid on the 2015 show and begin planning for the next big one, we need to congratulate some creative, talented and crap-happy people.

As part of the 2015 North American Manure Expo, a contest was held inviting interested people to submit their best Rejected Manure Expo Slogans. Participation was overwhelming with the expo committee receiving more than 750 entries from all over the world. Who knew that many people were interested in sharing their crappy ideas?

In some cases, different people came up with the same slogan idea. When a duplication occurred, the first person to submit the idea was credited with the slogan.

After wading through the entries, the list was narrowed down to the 50 most offal. The final decision was left up to the public with online voting held to pick out the top slogans.

It was hard work but 10 winners managed to float to the top. The Top 10 Rejected Manure Expo Slogans were:

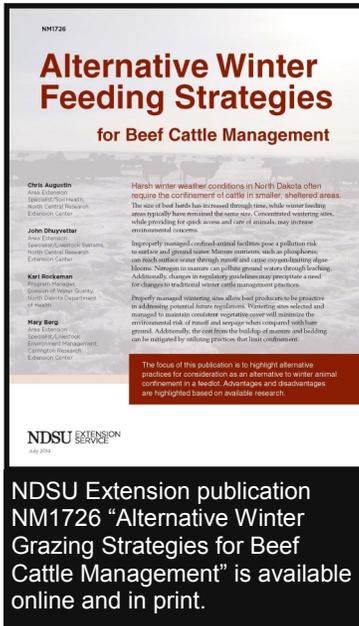
1. **Where no one stands behind their product.** Submitted by Ted Bay, WI
2. **NOBODY sticks their nose in our business.** Submitted by Dan Rathburn, GA
3. **Rated M for manure.** Submitted by Elaine Ayers, ND
4. **You name the species – we've got the feces.** Submitted by Shawn Huff, MA
5. **Nature called. It wants its nutrients back.** Submitted by Elaine Ayers, ND
6. **Our grass is always greener.** Submitted by Jason Ryan, MD
7. **Be part of the movement.** Submitted by Brendan Smith, NC
8. **The incredible spreadable.** Submitted by Elaine Ayers, ND
9. **Poopapalooza.** Submitted by Gene Karlan, OH
10. **The future of what's left behind.** Submitted by Tyler Rice, PA

Most of the winners were left speechless when informed of their win: a free 2015 Manure Expo T-shirt with the slogans printed on the back. But some were so moved by their good luck, they shared their excitement. "Well, I must admit, this is an unexpected honor," said Dan Rathburn of Georgia. "Apparently, the voters are a lot like me: warped and twisted individuals. Brings back my faith in humanity."

In the case of Elaine Ayers of North Dakota, who had three slogans in the top 10, she now has almost enough expo T-shirts to wear one every day of the week. She also might want to consider pursuing a career in writing comedy sketches or greeting card messages.

The North American Manure Expo committee would like to congratulate the winners and thank everyone who submitted a slogan. It resulted in a fun contest and helped brighten everyone's expo, except those brown with envy for not having a T-shirt.— Marg Land, Annex Publications, Manure Manager Magazine

# Winter Grazing Options in the Northern Great Plains



Winter feeding is the single highest line item in a producer's budget, accounting for 35 – 40% of the annual budget. Feed preparation, delivery, health costs, and manure and time management in a drylot can quickly add up, so opportunities to reduce these costs will contribute to a stockman's bottom line.

Livestock grazing through fall and winter can reduce costs and disperse nutrients from manure to depleted areas. More information can be found through the NDSU publication "Alternative Winter Grazing Strategies for Beef Cattle Management" at <https://www.ag.ndsu.edu/pubs/ansci/beef/nm1726.pdf>

Options exist for winter grazing of cattle in the northern Great Plains. Forage quality this time of year is generally poor, so supplementing livestock diets for the age and stage of cattle is very important. A backup plan to transport cattle home in severe weather conditions is also important.

Winter grazing should only be done on introduced or "tame" pastures since the concentrated manure load and subsequent nutrient release in early spring favors nitrogen demanding plants such as invasive cool season grasses.

## Winter grazing systems that are being implemented in the northern Great Plains are:

**Bale Grazing** – Allowing cattle controlled access to bales in the field.

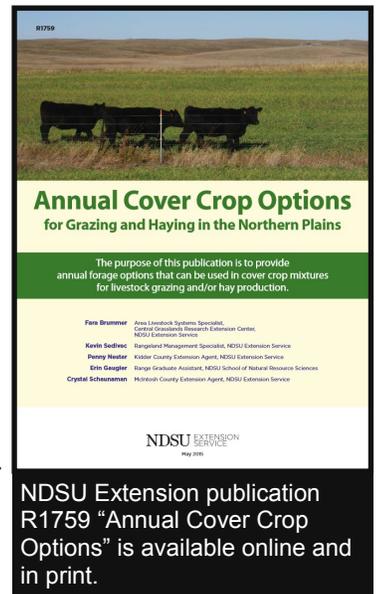
Access is limited through a portable electric fence. This system removes the cost of transporting bales.

**Swath Grazing** – Cutting hay at high quality, and leaving it in windrows for cattle feeding. The cost of baling and transporting is removed.

**Stockpiled Grazing** – Grazing cattle on standing forage that was not grazed, or lightly grazed with re-growth through the year.

**Cover Crop Grazing** – Grazing cattle on a mix of cover crops, with potential high yields and quality. For more information, refer to NDSU Extension publication "Annual Cover Crops for Grazing and Haying in the Northern Plains" <https://www.ag.ndsu.edu/pubs/ansci/range/r1759.pdf>

**Grazing Crop Residue** – Corn residue is the first choice for most producers as it can provide a high quality livestock diet, however careful attention needs to be paid on controlling livestock access to avoid grain overconsumption. Other crop residues can also be used. For more information, see University of Nebraska publication "Grazing Crop Residues with Beef Cattle" at <http://extensionpublications.unl.edu/assets/pdf/ec278.pdf>



If you have any questions regarding winter grazing systems please contact your local county Extension agent. -- *Fara Brummer, NDSU Area Specialist, Livestock Systems, Central Grasslands REC*





Miranda Meehan is the NDSU Extension Livestock Environmental Stewardship Specialist in the NDSU Animal Sciences Department. She grew up on a small livestock operation near Tuttle, ND. She completed her graduate studies at NDSU receiving a M.S. degree under Drs. Kevin Sedivec and Chris Schauer in Animal & Range Science in 2008 and received a Ph.D. in Natural Resource Management in 2011 working with Dr. Shawn DeKeyser.

Prior to joining the NDSU Animal Sciences and Extension teams, Miranda was employed as a Natural Resource Specialist at Carlson McCain, Inc. a consulting firm that specializes in providing ecological services including: environmental permitting, natural resource surveys, and biological assessments.

Miranda joined NDSU as the Extension Livestock Environmental Stewardship Specialist on March 16, 2015. The focus of her research and extension program is livestock and environmental interactions. Her interests include: grazing systems, riparian ecology and management, livestock and wildlife interactions, and impacts of energy development on livestock production.

Miranda Meehan  
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## Water Developments Enhance Livestock and Environmental Health

As we enter the new year the upcoming grazing season is likely not the current focus of your planning and management efforts. However now is the perfect time to be setting management goals and determining what practices and improvements are best suited to help you achieve these goals. When determining what improvements will give you the most bang for your buck, you may want to consider livestock water developments to improve access to water. Common water developments include troughs, pumps, wells and pipelines.

Water is the limiting factor for many livestock operations in North Dakota. Installing water developments can increase grazable acreage and extend the grazing season. Installing livestock watering sources in crop systems allows you to utilize crop residues and cover crops for forage. Adding water developments in spring and summer can improve grazing distribution as livestock tend to congregate near water sources. Distribution and utilization can be further improved by cross-fencing to creating additional pastures in a grazing systems. Over time these improvements, combined with appropriate management, have the potential to increase the carrying capacity of your operation, allowing for an increase in herd size and/or increased drought resistance with stockpiled forages.

Providing adequate water to livestock is critical for animal health and production; a 10 percent loss of body water is fatal to most species of domestic livestock. Water accounts for more than 98 percent of all molecules in the body and between 50 and 81 percent of an animal's total body weight at maturity. Water consumption can also be impacted by water quality. Livestock that are provided poor-quality water may have reduced water and feed intake, resulting in reduced production. Studies have shown that beef cattle allowed free access to ponds and dugouts have lower average daily gains in comparison to those provided water from the same source in a trough. Livestock for which pond and dugouts are the primary water source are at greater risk of contracting illnesses such as giardia, leptospirosis and cyanobacterial poisoning compared with livestock drinking from a trough.

In addition to the improvement in livestock production and health that can be attributed to water developments, they have also been linked to enhanced water quality. Currently, the leading impairment of surface water quality to the state's streams in rivers are fecal coliform and e. coli. The primary source of these bacteria is livestock manure and urine. Developing off-stream water reduces livestock use of surface water, improving water quality by reducing bacteria, nutrient levels and sediment loads, due to decreased bank erosion.

If you would like more information on this topic please reference the following NDSU extension publications.

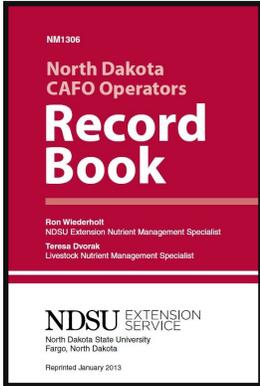
[AS1763-Livestock Water Requirements](#)

[AS1764-Livestock Water Quality](#)

[R1542-Grazing Riparian Ecosystems: Water Developments](#)

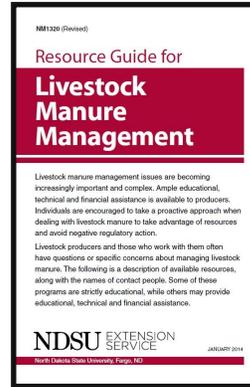
To learn more about cost share opportunities that can be used for water developments contact your local NRCS office, soil conservation district or conservation group. — *Miranda Meehan*

# Relevant NDSU Extension Publications



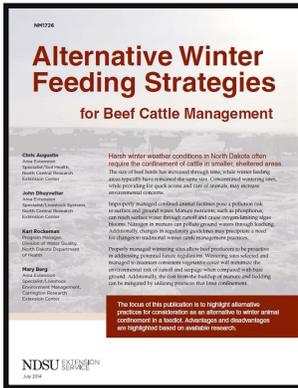
## [North Dakota CAFO Operators Record Book - NM1306](#)

By using this record book, North Dakota CAFO operators will meet the recordkeeping requirements of the North Dakota guidelines for AFOs and CAFOs that are not included in a nutrient management or mortality plan. 84 Pages. Web Only.



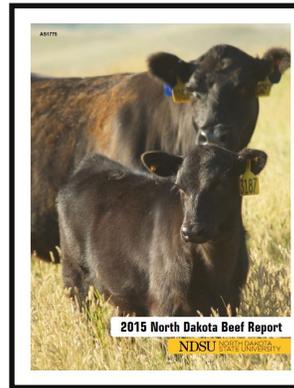
## [Resource Guide for Livestock Manure Management - NM1320](#)

Livestock manure management issues are becoming increasingly important and complex, but educational, technical and financial assistance is available. 4 Pages. Web Only.



## [Alternative Winter Feeding Strategies for Beef Cattle Management - NM1726](#)

The focus of this publication is to highlight alternative practices for consideration as an alternative to winter animal confinement in a feedlot. 12 Pages. Available in Print.



## [2015 North Dakota Beef Report - AS1775](#)

This report contains several small papers from researchers in ND on current research results related to beef cattle. The report is posted as a complete report as well as, individual reports. 64 Pages. Web Only.

## Center Points: Easy as 1-2-3...

The Carrington REC has a weekly blog with updates on what's happening now and information on coming events. Read online at [www.ag.ndsu.edu/CarringtonREC](http://www.ag.ndsu.edu/CarringtonREC) or subscribe to receive a weekly reminder and quick link.

Subscribing is as easy as 1-2-3:

1. Send an e-mail to [Listserv@listserv.nodak.edu](mailto:Listserv@listserv.nodak.edu)
2. Leave the subject line of the email blank
3. In the body (not the subject line) of the e-mail enter the following:  
**SUB NDSU-CARRINGTONREC-CENTERPOINTS yourfirstname yourlastname**

OR: Simply send a regular email to [Mary.Berg@ndsu.edu](mailto:Mary.Berg@ndsu.edu).



### Contact Us —

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# 5 Easy Steps for Composting Dead Livestock

AS1781

## Step 1

Place 2 feet of base material in pile or long row, depending on number of carcasses to be composted.



## Step 2

Lay carcass on top of base. Have at least 1 foot of base material between perimeter of carcass and edge of base.



## Step 3

If composting cattle, puncture the rumen to prevent it from exploding.



## Step 4

Cover carcass with 8 to 10 inches of bulking material.



## Step 5

Cover the entire pile or long row with 2 feet of cover material.



## Composting Material

- Base material: straw, old hay, coarse crop residues (corn stalks)
- Bulking material: manure or spoiled silage
- Cover material: straw, old hay, sawdust

## Things To Remember

- Make sure pile always has sufficient cover material.
- Turn pile every six months from early spring to late fall.
- To accelerate composting, turn pile every two months from early spring to late fall.
- Do not disturb pile or long row during winter months.
- Existing compost can be used to cover new piles or long row sections.

**Mary Berg**, Area Livestock Environmental Management Specialist, Carrington Research Extension Center

**Paige Brummund**, Ward County Extension agent

**Alicia E. Harstad**, Stutsman County Extension agent

**Penny L. Nester**, Kidder County Extension agent

**NDSU** EXTENSION SERVICE

North Dakota State University, Fargo  
December 2015

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For more information on this and other topics, see [www.ag.ndsu.edu](http://www.ag.ndsu.edu)

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New markets for finished cattle closer to North Dakota, such as the new packing plant operating in Aberdeen, S.D.; the increased demand for USDA Choice beef; the need for backgrounded feeders to meet feedlot demands; and the ample supply of cattle, feed grains, forages and co-products for feedlot use provide opportunities for feeding cattle in North Dakota and the surrounding region.

## Who Should Attend?

This intensive course is for cattle producers, feeders, backgrounders, feed industry personnel, animal health-care suppliers and anyone else who is interested in learning more about feedlot production, nutrition, waste management and marketing.

## Registration Information

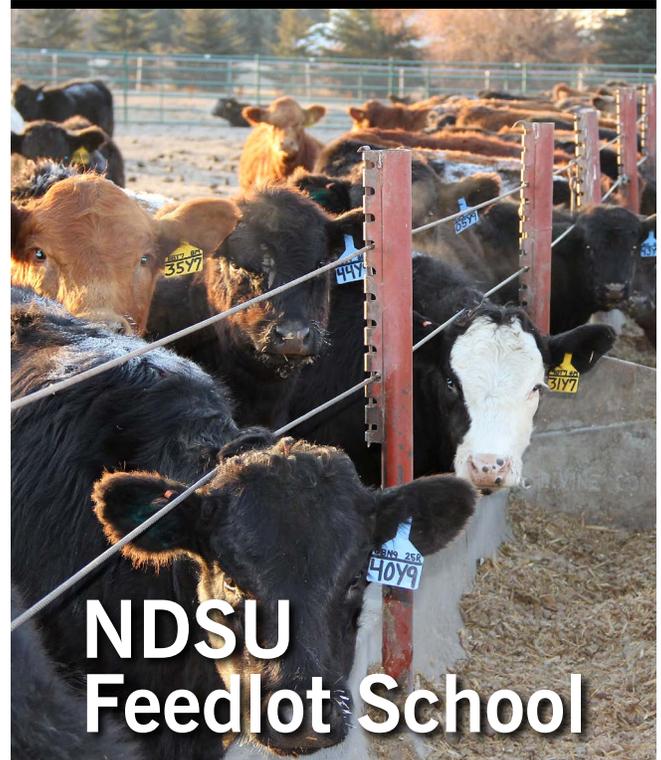
Cost: \$140 per person or \$190 for two people from the same operation (includes meals and a Feedlot School information binder). Participants must make their own lodging arrangements.

## Topics

Why Feed Cattle in North Dakota  
Animal Requirements  
Feed Additives and Growth Promoter Technologies  
Feed Processing/Mixing and Nutrient Optimization  
Ration Formulation/Calf Weib  
Feeds/Nutrient Analysis  
Livestock Stewardship/Beef Quality Assurance  
Disease Diagnosis, Treatments and Health Programs  
North Dakota Veterinary Diagnostic Laboratory  
Feeding Facilities Review  
Commercial Feedlot Tour (Pipestem Feeders)  
Future of Feeding Cattle in North Dakota  
Feed Bunk Reading and Manure Visual Observation  
CREC Feedlot Research Facilities Overview  
Low-stress Working Facilities  
Feed Testing Techniques  
Bunk Reading and Feed Delivery  
Budgets for Different Production Scenarios  
Business Structure and Aspects of Cattle Feeding  
Price Protection With Outlook And Hedging  
Nutrient/Manure Management  
Employer/Employee Relations  
Fine-tuning Price Protection  
Carcass Quality and Marketing on the Grid

## For more information, contact the Foster County office of the NDSU Extension Service

Joel Lemer, Extension Agent  
Courthouse, 1000 5th St. N, P.O. Box 80  
Carrington, ND 58421-0080  
Phone: (701) 652-2581 Fax: (701) 652-2081  
Email: joel.lemer@ndsu.edu



**Jan. 19-20, 2016**

Carrington Research Extension Center  
Carrington, N.D.

**Registration deadline: Jan. 12, 2016**  
**Limited to 25 participants.**

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