Composting Animal Manures

The benefits of composting vary depending on management and production situations:

- Using compost as a fertilizer reaps the benefits of improved fertility, water-holding capacity, bulk density and healthy biological properties.
- Livestock owners who compose benefit from odor and fly egg reduction as well as a decreased volume of product to spread.
- Weed seed reduction may be a benefit both situations prefer.

(Continued on page 4)
Spring Safety on the Farm or Ranch

As the machinery starts moving this spring, safety concerns for those operating inside and outside the equipment should be renewed. Every operation has different rules, however, the most things are open communication and an awareness of your surroundings. Both children and adults need to have conversations about general safety around overhead power lines, moving machinery, and working around livestock.

Machinery has changed dramatically over the past 100 years, upgrading from horse and plow to bigger, faster and stronger tractors, combines, sprayers and planters. With all these improvements, though, one thing has not changed: the operator.

Overhead power lines
An important, but often overlooked safety topic is overhead power line safety. Overhead power lines are uninsulated, making them extremely dangerous. Electricity always searches a path to the ground. If you or your equipment is within reach of the electric current and touching the ground, electricity will surge through your equipment and you.

One way to prevent electrical incidents is to use a spotter at a safe distance from overhead lines. Machinery and operators must remain at least ten feet from power lines, but tall equipment such as grain augers or loader buckets have a great risk of entering that ten foot radius. If there is an accident, the spotter will be able to call for help.

If your machinery does come in contact with an overhead power line, don’t panic! Remain in your cab (unless your life is in danger due to fire), and call the power company to inform them of your situation. If you must to leave the cab due to a life threatening situation, keep your arms and hands close to your body, climb down the steps of the cab, and then “bunny hop” or shuffle away from the machine, thus minimizing exposure to your extremities.

Machinery blind spots
A yard filled with machinery can become an obstacle course – especially during planting or harvest season. Often times, operator’s thoughts are occupied and may not be on who is in the yard. Communicating with your family and visitors about safe zones and machinery blind spots will help solve problems. Establish ground rules such as “children come into the house when the tractor is in the yard,” or “the grass is a safe spot.” Whatever it may be, openly communicating will help everyone be on the same page and ultimately prevent accidents from happening.

Livestock blind spots
Like machinery, livestock have blind spots. While “predator” animals have eyes located on the front of their head, “prey” animals (like livestock) have eyes located on the sides of their head. This means that livestock see more side-to-side, but lack the ability to see directly in front or behind. If livestock don’t recognize that you are near, their “fight-or-flight” instinct results in a kick, bite, or panic as they try get away. When working around animals, talk in a soft, calm voice so they know where you are at all times. Animals seem more alert around unfamiliar people or during calving and breeding season. If you are unfamiliar with livestock or they are not familiar with you, it is best to give them their space. — Emily Goff
EQUINE ENCOUNTERS

May 25: Ward County
June 6: Cass County
June 7: Stark County
June 8: Morton County

LOCAL PRESENTATIONS including
Deworming Protocols & Vaccination Programs (local veterinarians)
Equine Nutrient Management (Mary Berg)
Horse Pasture Management & Identifying and Controlling Those Pesky Weeds (Kevin Sedivec)
Biosecurity (local Extension agents) and/or Reproductive Considerations (local Extension agents)

Pre-registration would be appreciated for meal planning.
Contact your local Extension Office for each session.

Schedule (local)

5:30 p.m. Registration & Supper
$5 per person at the door
Youth are welcome!
6:00 p.m. Program

Contacts

Kelcey Hoffmann
Cass County Extension Agent
Phone 701-241-5700
Kelcey.Hoffmann@ndsu.edu

Jackie Buckley
Morton County Extension Agent
Phone 701-667-3340
jackie.buckley@ndsu.edu

Kurt Froelich
Stark/Billings County Extension Agent
Phone 701-456-4622

Paige Brummund
Ward County Extension Agent
Phone 701-857-6444
Paige.F.Brummund@ndsu.edu

Mary Berg
Livestock Environmental Mgmt
NDSU Carrington REC
Carrington office 701.652.2951
Bismarck office 701.328.7240
Mary.Berg@ndsu.edu
Composting Manure

Compost is a mixture of organic residues that have been piled, mixed, moistened and undergone thermophilic (heat) decomposition.

Proper site selection is the first step to creating successful compost. When selecting a site for composting, it is important to keep in mind the potential to pollute via runoff or leachate.

Manure for compost is typically piled in a windrow (long row), with dimensions dependent on equipment and available space.

The carbon-to-nitrogen ratio must be between 20:1 to 40:1 (carbon:nitrogen) for best results. A typical North Dakota bedded-pack beef manure has an appropriate C:N ratio for composting. Manure also contains the appropriate microorganisms responsible for helping convert manure to compost.

To create an environment conducive for microbial action, maintain a 50% moisture level in the windrow and keep the process aerobic (“with oxygen”). Maintain the oxygen level by turning the pile every 10-14 days, or when the internal temperature exceeds 160 F or drops below 110 F.

When a temperature of 130 F can no longer be attained, composting is complete, a process that may take five to seven turns. The compost pile must now cure (mature) until it reaches ambient temperature (surrounding environment temperature).

This usable compost should be analyzed for nutrient content before application. There are several laboratories that will analyze compost and many of them will send containers and lab-specific instructions. For most-accurate test results, take grab samples from several places on the piled compost and combine them into one composite sample.

Compost should be treated like a fertilizer, with spreader calibration before application. For more on spreader calibration refer to NDSU Extension publication “Manure Spreader Calibration for Nutrient Management Planning” (NM-1418). — Mary Berg

Pond Management

With winter behind us, it’s time to think about pond management for the upcoming year. It’s easy to forget about runoff ponds with mild winters and less snowfall than usual. Currently, there is less spring runoff across most of the state, but keep in mind that the potential for a large runoff event this spring, summer or fall is still present. As we have seen in recent years, periods of sustained wet weather can lead to pond management issues.

If your runoff pond does fill up, it is best to wait to pump it until the water can be applied to dry cropland, hay land or pasture. Runoff water can often be applied up to the infiltration rate of the soil. When possible, a sample of the runoff water should be tested prior to application. Contact your local extension agent for a list of laboratories that can analyze manure samples.

If your runoff pond is in immediate danger of overflowing, it is still preferable to control the overflow by pumping, siphoning, or using a designed spillway, as an uncontrolled overflow can damage the pond structure. If pumping a runoff pond is needed to prevent an immediate overflow, steps can still be taken to minimize the impact, including:

1. Don’t pump from the very top or bottom of the pond; pull water from the middle.
2. Direct the discharge to an area where it will have the least environmental impact, preferably away from any defined drainage.
3. Spread the runoff water out over as much area as possible, preferably on grass or hay land with vegetation.

Operation and maintenance plans need to be followed to prevent liquid manure storage ponds from overflowing; such discharges can cause severe environmental impacts.

In the event of an overflow or damage from excessive runoff, notify the North Dakota Department of Health, Division of Water Quality, at 701.328.5210. Keep track of the volume and duration of overflow. (The flow rate over a dike can be estimated if you know the depth and width of the overflow.)

If you have any questions or concerns, please call the number above or contact us at www.ndhealth.gov/WQ. — Jeremy Lang, ND Department of Health, Water Quality Division.

Containment Pond Management

Containment ponds are constructed to contain liquid manure and are designed to slow and control manure before it reaches a stream or water body. Ponds are designed to hold manure for a specified time, giving the liquid time to settle and the solids time to dry, preventing any liquid or solid runoff into designated drainage or water bodies. Containment pond effluent must be managed to prevent any direct injection into receiving water bodies. Monitoring and testing of pond effluent must be performed to ensure compliance with regulations. Monitoring of pond water levels and overflow rates is necessary to prevent pond overflows and discharges to water bodies.

NDSU Extension Publication NM 1626 is a guide to proper containment pond management as an important part of any nutrient management plan. This resource, along with other publications, is available online at https://www.ag.ndsu.edu/publications.
Monitor Livestock Water Quality

Spring rains have been received enthusiastically by farmers and ranchers following a fall and winter of below average precipitation. Despite the relief provided by the recent spring rains, water quality in ponds and dugouts may be compromised due to concentrated levels of salts, minerals and bacteria. It is recommended that livestock producers test water quality prior to livestock turnout.

Poor water quality can negatively impact livestock health. At a minimum, it can result in decreased water consumption, reducing feed intake and gains. However, elevated levels of some salts and bacteria can result in severe illness and even death.

Water sources should be tested for total dissolved solids (TDS), sulfates and nitrates. TDS measures salts: TDS levels should be less than 5,000 ppm for most classes of grazing livestock. Elevated levels of TDS may not be harmful to livestock health. However, due to our geology in ND, water with high TDS often also has high sulfate levels.

Sulfate recommendations are less than 500 ppm for calves and less than 1,000 ppm for adult cattle. High levels of sulfate can reduce copper availability in the diet. Elevated levels of sulfates may cause loose stool; whereas, very high levels of sulfate can induce central nervous system (CNS) problems and polioencephalomalacia (PEM), a brain disorder found in cattle.

Nitrate in itself is not toxic to animals, but at elevated levels it causes nitrate poisoning. Water sources receive runoff from fields and confined feeding locations that contain elevated levels of nitrogen are at risk of contamination.

Water with elevated nutrient levels are also at a higher risk for blue-green algae blooms in periods of hot, dry weather. Some species of blue-green algae (cyanobacteria) contain toxins that can be deadly when consumed by livestock and wildlife.

It is important to monitor water quality throughout the grazing season, as it changes in response to climate and environmental conditions. It is especially important to keep a close eye on water quality during drought, when using a shallow water source, or with water sources that have a history of water quality issues.

Many commercial laboratories and the NDSU-Veterinary Diagnostic Lab provide testing for livestock water quality and other specialized tests. The cost of a basic water quality test is approximately $25. Contact an NDSU extension office for a list of commercial laboratories in the state. If concerned about livestock disease caused by contaminated drinking water, contact your local veterinarian, the NDSU extension veterinarian, or the NDSU Veterinary Diagnostic Laboratory for a specialist. —Miranda A. Meehan, Extension Livestock Environmental Stewardship Specialist

More information on livestock water quality can be found in the following extension publications:

- Livestock Water Requirements – AS1763
- Livestock Water Quality – AS1764
- Nitrate Poisoning of Livestock – V839
- Cyanobacteria Poisoning (Blue-green Algae) – V1136
The project gives producers information on feedlot performance, quality grade and potential retained ownership profitability.

North Dakota State University’s Carrington Research Extension Center is partnering with the North Dakota Angus Association to sponsor the fifth annual North Dakota Angus University (NDAU) calf feed-out program this summer and fall.

Cattle producers interested in gaining a better understanding of how Angus-sired cattle perform in the feedlot, quality grade or the potential profitability through retained ownership can consign steers to the feed-out project at the center.

Producers consigned 138 head of steers to the fourth annual NDAU project, held in the summer and fall of 2015.

“In addition to the valuable information producers received regarding the feedlot performance of their cattle, the steers were used in a feedlot research trial,” says Chanda Engel, livestock research specialist at the center. “But no treatments are imposed that would reduce the performance of the animals.”

In the 2015 feed-out program, cattle:
- Averaged 101 days on feed
- Gained an average of 4.80 pounds per head per day
- Had an as-fed feed efficiency of 6.26 pounds of feed per pound of live weight gain (5.51 pounds of dry-matter feed for a pound of live weight gain)

Animals that are consigned should be steers with at least 50 percent Angus genetics and a desired target weight of 800 and 900 pounds at the time they are placed in the program. Producers wishing to consign steers that are lighter than 800 pounds should contact Engel to discuss potential options.

Participants in the NDAU will receive periodic progress reports on their calves’ performance, as well as a final report on the overall performance, efficiency and carcass traits for their calves.

Producers who consign cattle pay the feeding costs based on the average cost of gain, veterinary costs and a modest yardage charge. The center carries these costs until the cattle are marketed. After the cattle are marketed, the center deducts all applicable fees from the sale price without an interest charge.

Consigned cattle should be delivered to the center’s feedlot during the first week of June.

To consign a group of cattle or for more information, contact Engel at 701-652-2951 or chanda.engel@ndsu.edu; or call Mike Wendel, North Dakota Angus Association program liaison, at 701-710-0425. — Chanda Engel
Coming Events

June 8  NDSU Extension Service Equine Encounter/Morton County. More information on page 3.
June 16 Carrington REC Crop Management Field School. Field training using demonstrations and research trials on crop, crop pest and soils management. CEU’s for Certified Crop Advisers. More information, including registration details, is available at www.ag.ndsu.edu/CarringtonREC.
June 21 ND Stockmen’s Association Feedlot Tour. For more information, watch www.ndstockmen.org.


July 19  Carrington REC Field Day. For more information, watch www.ag.ndsu.edu/CarringtonREC
Aug 3-4 North American Manure Expo, London, OH. For more information, see http://www.manureexpo.org/
Aug 23 Carrington REC Nutrient Management Day. Full day workshop consisting of presentations, demonstrations, and field crop trials. Composting manure and mortalities, manure spreader calibration and using manure as a fertilizer. For more information, watch www.ag.ndsu.edu/LEM
Aug 30-Sept 1 ND Society for Range Management ND Range Management School at the Western ND 4-H Camp, Washburn, ND. Principles of grazing management and how to integrate them into your livestock operation. Ranch tours and presentations from livestock producers. CEU’s for SRM “Certified Professional in Rangeland Management” program. Additional information attached to this newsletter.

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 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
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.

Contact Us —
NDSU Carrington REC
663 Hwy 281 NE | PO Box 219 | Carrington, ND 58421
Phone 701-652-2951 | Mary.Berg@ndsu.edu
Visit us on the web at www.ag.ndsu.edu/CarringtonREC

“To create learning partnerships that help youth and adults enhance their lives and communities.”

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Land Use & Management Practices to Enhance Water Quality Training-Agenda

United Tribes Technical College Bismarck, ND

TUESDAY, JUNE 28, 2016

8:00 a.m.   Registration
8:30 a.m.   Welcome and Housekeeping
8:45 a.m.   North Dakota Livestock Nutrients
9:00 a.m.   Nutrient Management
9:30 a.m.   Manure Value
10:00 a.m.  Break
10:15 a.m.  Manure Brokering
10:45 a.m.  Regulation Panel
11:15 a.m.  Emergency Spill Response
11:45 a.m.  Morning Wrap-Up
12:00 p.m.  Lunch
1:00 p.m.   Travel to Menoken Farm
1:20 p.m.   Manure Composting
2:20 p.m.   Manure Spreader Calibration
3:00 p.m.   Break
3:15 p.m.   Mortality Composting
3:45 p.m.   Cost-share Opportunities
4:15 p.m.   Wrap Up and Travel back to UTTC

Limited to 50 Participants
Land Use & Management Practices to Enhance Water Quality Training-Agenda
United Tribes Technical College Bismarck,

WEDNESDAY, JUNE 29, 2016

8:00 a.m. Welcome and Introductions
8:15 a.m. Land use trends in the northern Great Plains
8:45 a.m. How streams work: stream morphology and hydrogeology
9:30 a.m. Riparian vegetation
10:15 a.m. Break
10:30 a.m. Land use impacts on riparian health
11:00 a.m. Managing agroecosystems to improve riparian health
11:30 a.m. Grazing management recommendations to improve riparian health
12:00 p.m. Lunch
1:00 p.m. Travel to field
1:20 p.m. Water flow patterns
1:30 p.m. Riparian assessments
3:30 p.m. Riparian Management
5:00 p.m. Wrap Up and Travel back to UTTC

REGISTER TODAY!
Contact Miranda Meehan
Phone: 701-231-7683
Email: miranda.meehan@ndsu.edu

Contact Mary Berg
Phone: 701-652-2951
Email: mary.berg@ndsu.edu

Limited to 50 Participants
AUGUST 31, 2016

12:30 p.m.  Registration
1:00 p.m.   General Introduction and Camp Overview
1:30 p.m.   Travel to Reiser Ranch
1:45 p.m.   Tour of Operation
2:30 p.m.   Concurrent Sessions
             -Soils and Ecological Sites
             -Range Plant ID and Nutrition
4:00 p.m.   Return to Camp
4:30 p.m.   Producers discussion of operations and goals
5:30 p.m.   Dinner
Evening    Work on Participants’ Grazing Management Plans

AUGUST 30, 2016

7:00 a.m.   Breakfast
7:30 a.m.   Goal Setting & Ranch Planning
8:00 a.m.   Principles of Grazing Management
9:15 a.m.   Travel to Goven Ranch
10:00 a.m.  Stocking Rate Exercise
12:00 p.m.  Lunch in the field
1:00 p.m.   Grazing Management
            Tour of ranch showing examples
3:00 p.m.   Infiltration demonstration
4:00 p.m.   Return to Camp
5:00 p.m.   Dinner
5:30 p.m.   Producers to speak about operations
Evening    Work on Participants’ Grazing Management Plans
North Dakota Range Management School Agenda
ND 4-H Camp in Washburn, ND

SEPTEMBER 1, 2016

7:00 a.m.   Breakfast
8:00 a.m.   Evaluating Inventory Data
9:30 a.m.   Range Improvements
10:00 a.m.  BREAK
10:15 a.m.  Monitoring
12:00 p.m.  Lunch
1:00 p.m.   Wrap Up and Evaluation/post-assessment

REGISTER TODAY!

Early Rate: $150 per operation + $75 for each add person (now through August 1st)

Standard Rate: $200 per operation

Contact Fara Brummer
Phone: 701-424-3606
Email: fara.brumer@ndsu.edu
This year’s school will focus on the principles of grazing management and how to integrate them into your livestock operation. The school will include ranch tours and presentations from livestock producers. Participants will receive a range inventory and monitoring kit.

Early Rate: $150 per operation + $75 for each add person
Standard Rate: $200 per operation + $100 for each add person

* Early rate ends August 1
* registration includes meals and lodging

REGISTER TODAY!
Contact Fara Brummer  Phone: 701-424-3606  Email: fara.brummer@ndsu.edu
2016 North Dakota Range Management School

Date: August 30 – September 1, 2016
Location: Western North Dakota 4-H Camp, Washburn

Please send Registration to Fara Brummer at:

4824 48th Ave SE or fara.brummer@ndsu.edu
Streeter, ND 58483

CONTACT INFORMATION

Please submit complete contact information for all attendees if registration for multiple participants.

<table>
<thead>
<tr>
<th>FIRST NAME:</th>
<th>LAST NAME:</th>
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<tbody>
<tr>
<td>OPERAION NAME:</td>
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<td>ADDRESS:</td>
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<tr>
<td>CITY</td>
<td>STATE</td>
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<td>PHONE</td>
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PAYMENT INFORMATION

Please submit payment as check or cash, credit cards will be accepted.
Make Checks payable to ND SRM

<table>
<thead>
<tr>
<th>Registration Type</th>
<th>1st Person</th>
<th>Additional People</th>
<th>Total</th>
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<tbody>
<tr>
<td>*Early Bird Registration</td>
<td>$150</td>
<td>+</td>
<td>____ x $75</td>
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<tr>
<td>Standard Registration</td>
<td>$200</td>
<td>+</td>
<td>____ x $100</td>
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* Early Bird Registration Rates End August 1st!

LODGING INFORMATION

Lodging and camper hook-ups are available at the 4-H Camp location free of charge
Please indicate if you are staying at the 4-H Camp and what nights and the number of individuals

<table>
<thead>
<tr>
<th>Night</th>
<th>Number of Men Staying</th>
<th>Number of Women Staying</th>
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<tbody>
<tr>
<td>August 30th</td>
<td></td>
<td></td>
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<tr>
<td>August 31st</td>
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<td></td>
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<tr>
<td>Bringing Camper: YES / NO</td>
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MEAL INFORMATION

Please indicate which meals you will be present for and the number of individuals

<table>
<thead>
<tr>
<th>Day</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
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<tr>
<td>Aug. 30th (lunch and dinner only)</td>
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<tr>
<td>Aug. 31st (breakfast, lunch, and dinner)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sept. 1st (breakfast and lunch only)</td>
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</table>

Do you have special dietary needs? **Yes / No**

If **Yes** what are your needs? ___________________________________________________________
Easy Steps for Composting Dead Livestock

**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

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