THE DAIRY BULLETIN

A NEBRASKA DAIRY EXTENSION UPDATE Fall 2019

3 Goals to Achieve Greater Cow Comfort

By Kim Clark, Nebraska Dairy Extension Educator

Dairy cows spend 12 to 14 hours a day lying down. Ensuring they have adequate space and comfort for lying leads to healthier, cleaner cows producing higher quality milk. Dairy farmers can achieve this by focusing on goals related to cows, management and comfort:

1. **Our goal for cows** is to provide clean, dry bedding, which improves comfort and lying times while controlling bacterial counts and udder health while not interrupting natural movements of rising and lying behaviors.

To ensure optimal cow comfort, ask yourself these questions:

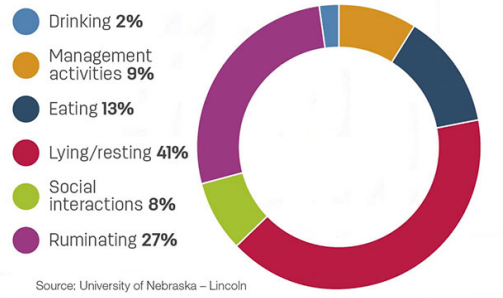
- Are cows and stalls clean and dry?
- Do cows easily and readily use the stalls?
- Are there injuries, punctures, abrasions, swelling of hocks, legs, hips, etc.?
- Do cows have to push, bang or bump against stall components to recline, rise or change positions?
- Do cows have traction to easily recline and rise?

The cow is the final inspector; if cows are not using stalls or are dirty and show signs of injury, change is necessary.

2. **Our management goal** is to reduce or eliminate injuries and swelling to hocks, necks, legs and hips of cows in the herd, while making the most efficient use of farm labor by reducing the amount of time required to clean manure from the stall and replace bedding.

What's in this Issue?

FIGURE 1 Daily time budget for lactating dairy cow (hours)



3. **Our comfort goal** is to reduce the occurrences of any or all of the comfort issue red flags. The first way to reach this goal is to identify why cows show signs of comfort issues. One reason may be the stalls are too small for the size of the cow. Another reason could be inadequate bedding material (not enough is being used;

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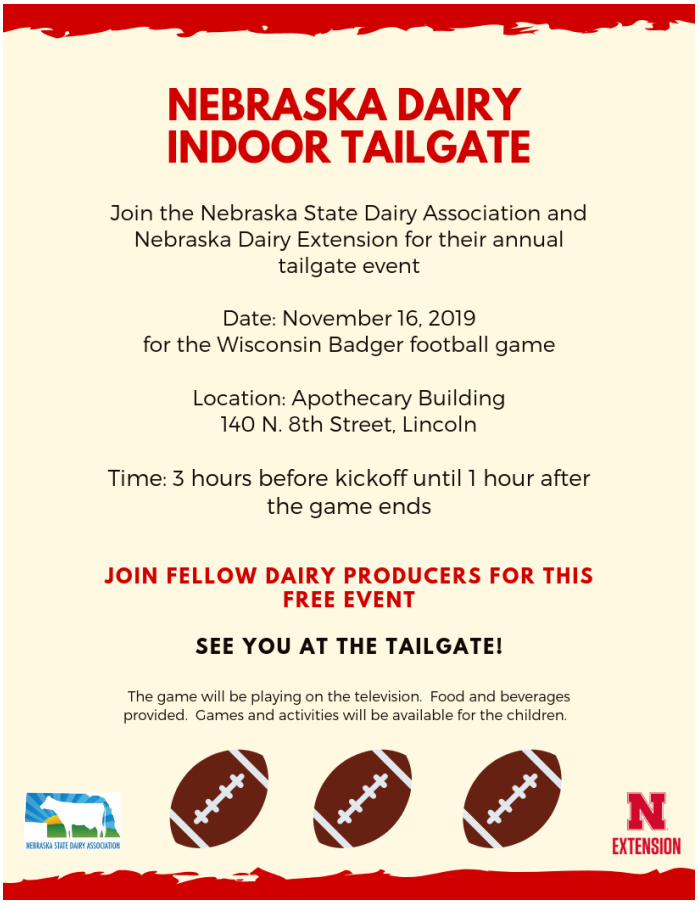
it is too wet; bedding is not managed effectively; stalls are not cleaned often enough; etc.).

Watch for these red flags of cow comfort issues:

- Hock lesions – May be the result of small stalls and space restrictions, or short chains in tiestalls
- Abrasions on the back of the neck – Oftentimes caused by the height or location of the neck rail
- Broken tails – These are signs of poor animal handling
- Lameness – Indicators include overgrown claws, poor stall cushioning, short stalls
- Dirty cows – Not directly a cow comfort issue, but dirty cows are linked to higher somatic cell counts (milk quality issue)

By honing in on these goals, asking these questions and looking for the red flags, dairy farmers can identify the concerns holding their herds back from optimal cow comfort and the production and performance benefits that come with it.



The Temperature to Thaw Colostrum is Just as Important as Colostrum Itself

By Kim Clark, Nebraska Dairy Extension Educator

It is no secret that colostrum provides the antibodies a calf needs to build immunity. The antibodies, specifically called immunoglobulins in colostrum, are absorbed in the calf's small intestine in the first few hours of life. After the first four hours of life, the absorption of immunoglobulins decreases. Therefore, it is important that newborn calves receive colostrum within four hours of birth.

In many cases, high quality colostrum is frozen for use when calves are born. The quality of the colostrum is measured when it is fresh, placed into a bag for freezing and then labeled with the quality of the colostrum and the date the colostrum was produced. High quality colostrum is measured using a Brix refractometer and should read 22% or greater. Anything less than 22% is lower quality and does not help the calf build up immunity. The quality of colostrum is equally, if not more important, as providing the calf colostrum in the first few hours of life.

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It is a common practice, when a calf is born to remove frozen colostrum from the freezer to thaw in hot water and then continue to perform newborn calf cares. The water temperature to thaw the colostrum should be between 120° F and 140° F (49-60° C). Water temperature above 140° F (60° C) is inactivating the immunoglobulins in the colostrum, thus decreasing the amount of immunoglobulins absorbed in the small intestine. When we test the quality of colostrum, we measure the amount of total immunoglobulins. We do not have instruments to measure the amount of active and inactive immunoglobulins. Immunoglobulins may be deactivated if the water temperature gets too hot, which is why we do not recommend a water temperature above 140° F (60° C) for thawing.

Typically, water heaters are set to produce water of 170 -180° F (77-82° C). If we would thaw colostrum with water from a water heater and then measure the quality of the colostrum, the quality will measure the same as when it was fresh, but the amount of active immunoglobulins will be decreased. Therefore, the quality of the colostrum has decreased and calves are not receiving the antibodies they need for immunity. If you are using water from a hot water heater, fill a 5 gallon bucket about 1/3 full with hot water and mark that line on the inside of the bucket. Stick a thermometer in the water and begin adding cold water until the temperature is between 120° F and 140° F (49-60° C). When the water temperature is in that range, make another mark on the inside of the bucket. The first mark shows how much hot water to put in the bucket first, and the second mark shows how much cold water to add to ensure a safe temperature to thaw colostrum. A good rule of thumb is if the water is too hot for you to stick your hand into, it is too hot to thaw colostrum.

As the newest calf is born and you prepare newborn calf cares, keep in mind these three reminders.

1) Feed high quality colostrum (22% Brix or greater) within four hours of birth.

2) The water temperature to thaw colostrum should be between 120-140° F (49-60° C).

BELOW IS A LIST OF CALF CARE & HANDLING VIDEOS AVAILABLE IN ENGLISH AND SPANISH

Videos are 3-4 minutes in length and can be viewed at: https://mediahub.unl.edu/channels/27873

Newborn Calf Care

1. Passive Immunity
2. Processing newborn calves
3. Harvest and storage of colostrum
4. Evaluation of colostrum quality
5. Recommended colostrum feeding techniques
6. Proper us of an esophageal feeder
7. Evaluating protein absorption from colostrum

Hygiene

1. Importance of hygiene
2. Monitoring cleanliness of the calf kitchen

Low-stress handling

1. Importance of Low-Stress Handling
2. Determining flight zone & Defining Point of Balance
3. Handling newborn calves
4. Heat and cold stress
5. Transportation and moving calves

Automatic Calf Feeders

1. Automatic calf feeder management
2. Group housing facilities
3. Nutrition & health considerations
4. Cleaning and sanitation of automatic calf feeders

3) Measuring colostrum quality measures the total amount of immunoglobulins; the number of inactive immunoglobulins increases as the colostrum becomes too hot thus reducing colostrum quality fed to the calf.

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Manure Impact on Soil Aggregation

By Rick Koelsch, Biological Systems Engineer

If manure increases formation of larger (macro) and more stable soil aggregates, several benefits may result for fields fertilized by manure compared to commercial fertilizer including:

1) Reduced runoff and soil erosion;

2) Increased water infiltration into the soil possibly leading to greater drought tolerance; and

3) Partial offsetting of higher soil P levels resulting from manure application and limiting P loss to local surface water.

This article will unpack some of the potential benefit of manure to soil quality by reviewing past research for clues as to manure's benefits. Several research studies have documented manure application impact on improvement of soil physical

properties. This blog article examines published research by Charles Wortmann and Charles Shapiro, The Effects of Manure Application on Soil Aggregation.

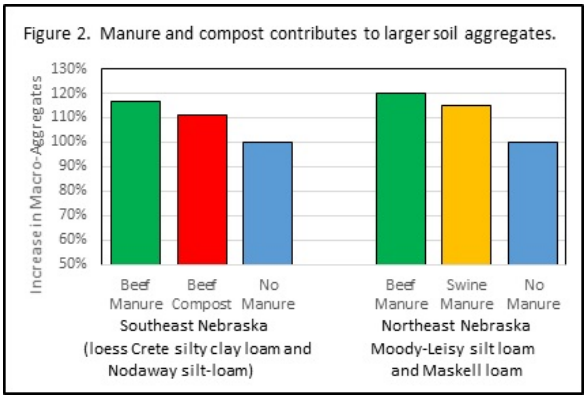
Wortmann and Shapiro conducted studies at three separate Nebraska farms to explore the impact of composted beef manure, stockpiled beef manure and swine manure on soil aggregate size. Their hypothesis proposed that manure will produce increased macro-aggregate formation with the intent of learning 1) how quickly these aggregates form, 2) impact of alternative manure sources, and 3) the residual effects of manure on aggregates. Three studies were conducted with silty loam or silty clay loam soils. Feedlot manure solids was applied at 20 to 22 dry tons/acre (roughly 40 to 44 wet tons/ac) and swine manure at 1.2 dry tons/acre (roughly 4800 gallons per acre if manure is 6% solids). Four conclusions were drawn providing clues about manure's benefits.

Water stable large macro-aggregates were increased 2 to 3 times for manured soils compared to commercially fertilized soils. All macro-aggregates increased by 10 to 20% for manured vs commercially fertilized soils (see Figure). This increase was consistent across all soil types evaluated. A Michigan State Extension publication suggests that "When manure … is added to the soil it is quickly colonized by millions of bacteria…bacteria producing large quantities of polysaccharides. These polysaccharides function like

Figure 1. Manure improves soil physical properties such as soil aggregate formation. Photo courtesy of USDA NRCS Soil Health flickr collection.

sticky glue in the soil and can actually stick particles together into aggregates."

The formation of macro-aggregates occurred with all manures with some advantage for compost and similar effects for raw feedlot manure and swine slurry. The swine manure's solids application rate was only 6% of that of feedlot manure but still achieved very similar benefits. This might suggest that achieving the physical soil property benefits may be more dependent upon the rapid growth in soil micro-biology and less dependent on the total solids in the manure.



Water-stable macro-aggregates formed within 15 days after manure application, persisted over a 7 month observation period, but were no longer found on a separate tilled site that was without compost for 5 years. The effect of manure or compost on macro-aggregate formation soon after application (first observation made at 15 days) suggests an immediate value from manure application. The study observed this benefit lasted at least 7 months but disappearing five

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years later. Other research has suggested this benefit lasts longer in no-till fields.

Phosphorus was observed to concentrate in the water-stable macro-aggregates, twice as great in the large aggregates as the whole soil P level. This may provide additional protection resulting from manure for holding P in the soil and reducing P in runoff. However, previous research has documented that P movement from cropland is connected to soil surface P levels. Managing manure to keep soil P levels low, near levels required for optimum crop production, remains our best practice for protecting water quality. But manure's large aggregate building response and P concentration in those large aggregates help protect water quality.

This article demonstrates the take home message that manure improves the physical characteristics of our soils not experienced with commercial fertilizer. These improvements to the soil aggregates opens the possibility for environmental and economic benefits. This possibility will be explored in future articles.

Dairy Margin Coverage FAQ

By Robert Tigner, Agricultural Systems Economist Educator

What is DMC?

- DMC stands for Dairy Margin Coverage. DMC evolved from previous dairy income support programs. DMC is a direct descendant of MPP-Dairy. Over its evolution, dairy policy has moved from certainty, set minimum price, to income risk that is insured by DMC.

Is DMC permanent?

- No, DMC is part of the commodities title of the 2019 Farm Bill that has temporary authority. The Agricultural Act of 1949 is the permanent farm legislation that could take effect if no temporary farm legislation is passed.

How is an indemnity payment calculated in DMC?

- DMC pays when the margin coverage chose is greater than the calculated monthly margin, US All milk price minus US feed cost.

When can I sign up?

- Signup started 17 June 2019 and last till 20 Sept 2019.

How much milk can I cover with DMC?

- You can cover up to your actual production history but with two tiers of coverage. Up to 5 million pounds, Tier I, has a separate lower premium structure than Tier II. Tier II can be covered with a higher premium structure. Premium amounts are based on the chosen coverage level threshold (CLT). CLT is the margin chosen that a dairy wants to insure.

Can a dairy update its actual production history?

- No and there will be no annual bump, or production increase. Dairy operations new since 2013 will follow a FSA procedure to establish a production history.

USDA United States Department of Agriculture
Farm Service Agency

What is a new dairy operation?

- Moving a diary to a new county, state, new ownership arrangement, or new partners to an existing dairy operation is not a new dairy.

I was in MPP-Dairy. How do I get my premiums back?

- You can either receive 50% of the MPP-Dairy premium in cash or as a 75% credit toward DMC premiums.

I produce well over 5 million pounds of milk. How does Tier I and Tier II work?

- As an example, if you production history is 11 million pounds, the first 5 million pounds is eligible for Tier I coverage. The next 6 million pounds is eligible for Tier II coverage. You can select different coverage levels for Tier I and Tier II milk, but if Tier I coverage is selected below $8; the same coverage level must be selected for Tier II milk. If a dairy chooses $8.50 Tier I coverage, the dairy must choose a lower coverage in Tier II.

Have coverage percentages changed?

- Yes, a dairy can now cover from 5% to 95% of milk production. Previously the coverage choices were from 20% to 90%.

Have premiums for DMC changed compared to MPP-Dairy?

- Yes Tier I premiums are lower than the premiums in MPP-Dairy either 2016-17 or the lower 2018 premiums.

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When will premiums be due for DMC?

- For 2019, premiums will be due 20 September 2019. The date has not been set. Premiums will be due 1 September for the 2012-2023 coverage years.

Is there a premium discount?

- Yes, if you sign up for all 5 years of DMC coverage by 20 September 2019. The discount is 25%. There is no discount is a dairy signs up year by year.

Has the MPP-Dairy tool been updated for DMC?

- Yes, new premiums have been added along with the current margin projections and the coverage percentages. The DMC Decision Tool calculates Tier I and Tier II expected payments and probability of that payment has been based on current milk prices from futures options trades.

Upcoming Dairy Events

Date	Program/Event	Location
August 16, 11:00 am	Calf Care Lunch N Learn	Summit Calf Ranch, Rising City, NE (1 mile north and 1 mile of Hwy 92 & 81 intersection)
November 15	Dairy Leadership: Kick-off event	Lincoln
November 16	Annual Dairy Producers Tailgate	Apothecary Building 140 N. 8th Street, Lincoln
December 4	Livestock Risk Management workshop	Columbus
January 2020	I-29 Moo University Winter Workshop Series	Norfolk
February 9-13, 2020	Dairy tours in Tulare, CA	Fresno, CA
February 24, 2020	Dairy Leadership: Farm Finances workshop	Columbus
February 25, 2020	Nebraska State Dairy Association Annual Convention	Ramada Hotel and Conference Center, Columbus

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