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*Our New Website: <http://yadkin.ces.ncsu.edu>*

### Nitrates in Corn Silage

As you all know, the rain has not blessed everyone this year. For the most part, corn silage looks good but there are areas where the corn is not so good. You probably want to consider nitrate testing of corn silage especially in the dry areas. Samples can be sent to NCDA's forage testing laboratory and nitrates will be run at no cost. Drought stressed corn will tend to be higher in nitrates, because the plant is not able to make sure of the nitrogen that is absorbed. The table below contains ranges in nitrate concentrations for feeds. If you suspect nitrate problems, you can send a sample of the forage to the NCDA Forage Testing Laboratory and nitrate analysis can be run free of charge. Results from the lab are expressed as percent nitrate on a dry basis.



#### **Nitrate**

#### **% of DM Comments**

0 - .44	Considered Safe.
.45 - .88	Generally safe when fed in balanced rations. Limit to one-half of ration dry matter for pregnant animals.
.89 - 1.50	If used, should be limited to 25% of ration dry matter. Feed with care.
Greater than 1.5	Potentially toxic, exercise caution.

#### **CONSIDERATIONS WHEN USING FEEDS CONTAINING NITRATES**

1. Ensilage forage if possible to reduce nitrate level. It is best to ensile at least three weeks before feeding, but any amount of fermentation will reduce the nitrate level some.
2. The majority of plant nitrates are in the stalk, especially the lower part. Raising the cutter bar during chopping will reduce silage nitrate levels.
3. Introduce feeds containing nitrates into rations slowly over a period of several weeks.
4. Dilute forages containing high nitrates with "clean" feeds. Use another forage and/or high fiber by-product feeds.
5. Feed a balanced ration containing adequate levels of protein, fiber, energy, minerals, and vitamins.
6. Young, growing, and pregnant animals are most susceptible to nitrate poisoning. Look for signs of labored breathing, staggering and panting.

### **Northwest District Dairy Show**

The Northwest District Dairy Show will be held on Saturday, August 25, 2007, at the Alleghany County Fairgrounds in Sparta. A Fitting and Clipping Contest will begin at 2:00 with Showmanship beginning at 4:00 pm. Please have entry forms back to Nancy Keith at P. O. Box 97, Yadkinville, NC 27055 and a check payable to Yadkin 4-H/Dairy Club (\$5/animal) by August 15, 2007. The Alleghany County Show will be held on Friday Night, August 24, 2007 which is open to anybody. If you are interested in showing in the Friday night show, please indicate on entry form.

## Milk Quality and Free Stall Bedding Management

Dr. Donald E. Pritchard

NCSU Extension Dairy Specialist

Dairy producers know that keeping stalls clean and comfortable is an important component of producing quality milk. Dirty cows usually results in low quality milk. But even with this knowledge, many producers still do not manage their free stalls properly. At the 2007 summer regional meeting of the NMC, Drs. Jeffrey Reneau and Russell Bey from the University of Minnesota discussed the relationship of free stall bedding management and milk quality. Edited excerpts from their paper published in the proceedings of the meetings are reprinted below. Their comments are excellent guidelines for producers to use as they strive to produce high quality milk.

The choice of bedding material will depend on compatibility with the farm's manure system, availability, cost, and the characteristics that will best facilitate cow hygiene, comfort and udder health. While clean sand has become the "gold standard" among bedding materials, many other materials, including recycled manure solids, are used successfully. Regardless of the bedding material used, maintaining clean, well bedded stalls is imperative to having clean cows.

The frequency of changing the bedding material will depend on the material used, with organic materials requiring more frequent changing. The goal is to keep the bacteria count in the bedding as low as possible so teat ends and udders are in contact with the lowest number of bacteria possible while the cows are lying in the free stalls. Bedding conditioners can help slow the rate of bacteria growth, but frequent application is required, especially for organic materials.

Bedding management practices are affected by many factors, including the following: cow density (crowding), nutrition level, stall cleaning frequency, stall design, alley scraping frequency, ventilation, bedding storage method, weather, bedding frequency, and bedding strategies (e.g. no bedding used or piling bedding in front of stalls).

The researchers gave the following five key "take home messages" from their presentation: 1) Bedding bacteria counts are positively related to teat end bacteria counts; teat end bacteria counts are positively correlated with intramammary infections; and there is a positive relationship between cow hygiene and somatic cell counts. 2) To remain healthy and productive, cows need to lie down 11 to 12 hours each day. These long durations of rest place teats in direct contact with bedding material. Therefore, consistent efforts to minimize teat exposure to environmental bacteria through bedding management will be crucial to maintaining udder health and quality milk. 3) Improved cow hygiene will reduce teat exposure to environmental mastitis pathogens, reduce intramammary infections, and reduce SCC. 4) Excellent pre-milking cow prep to remove environmental bacteria from teat surfaces prior to milking is the last line of herd management defense in assuring consistent production of quality milk. 5) Whatever bacteria are not successfully removed during the pre-milking cow prep will end up in the bulk tank milk. Bulk tank or line sampling of each milking shift and culturing for environmental pathogens will accurately indicate the effectiveness of pre-milking cow prep. Improved bedding management can result in higher quality milk, but it requires consistent attention to doing things correctly that leads to cleaner cows when they are milked.

### 2007 North Carolina State 4-H Dairy Judging Contest

Thanks goes out to Wayne Lutz for hosting and providing animals for the State 4-H Dairy Judging contest on June 18th. Thanks also goes out to Claire Stokes Wylie and Kevin Bridges for providing animals as well. The Northwest Area Dairy Judging Team; Melinda Staebner and Pearl Pilcher (Yadkin County), Avery Lutz (Davie County), and Brittany Sturgill (Alleghany County) placed first in the Senior division. Emily Spaugh judged as an individual. Avery and Melinda placed first and second respectively overall and are continuing to train for the state team. Natasha Hamm from Alleghany County judged in the Junior division.

#### Dates of Upcoming Events

- **October 1 & 2—Dairy Shows, Dixie Classic Fair**
- **October 3—Continuing Education Workshop for Certified Animal Waste Operators, 6 hours credit, Bowman Farm, Guilford County**
- **October 19-21, Dairy Shows, NC State Fair**
- **November 8 & 9, 10 hour Initial Animal Waste Operator Certification Training, Iredell County Ag Center from 9am to 3 pm.**
- **November 16—Continuing Education Workshop for certified operators—Iredell County. More details later.**

### Water for Dairy Cattle

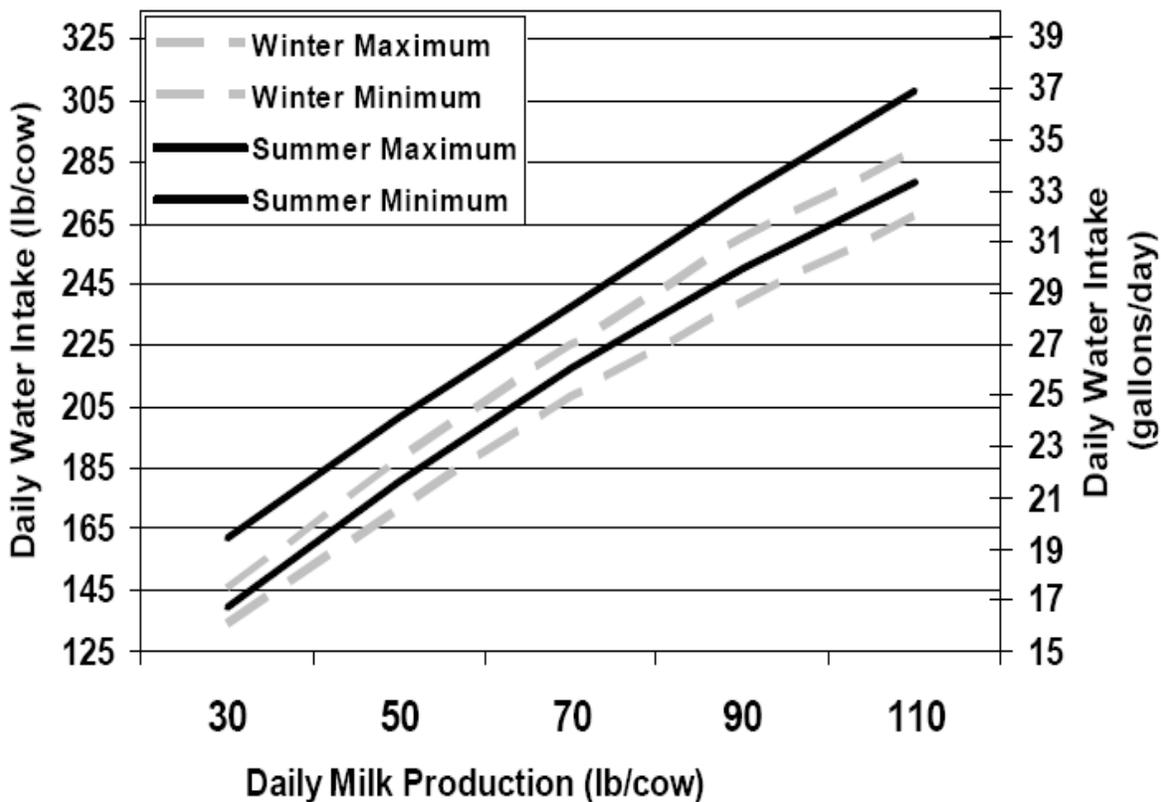
*Dr. Lon Whitlow*

*NCSU Extension Dairy Specialist*

Milk is 87% water. Therefore, a cow producing 100 lb. of milk daily secretes 87 lb. or over 10 gallons of water just as a part of the milk. Water is also needed for metabolic processes including the production of the milk and for cooling. All requirements considered, water requirements for a cow producing 100 lb. of milk daily will be between 30 and 35 gallons daily, more in the summer when a larger amount of water is lost from cooling.

Some of the water requirement is provided by drinking water and some is provided as part of the feed. In North Carolina, most rations are based on corn silage and the TMR will contain around 50% water. With a TMR containing 50% moisture, a cow producing 100 lb. of milk will consume about 6.5 gallons of water as a part of the feed. Drinking water must supply the remainder of about 25 to 30 gallons. The graph below provides an estimate of the total water consumption of cows at various levels of milk production during winter and summer. Minimum and maximum amounts provide a range to account for other factors affecting water consumption.

**Total Water Intake for Dairy Cows by Season  
(Includes Drinking Water and Water in Feed)**



To determine if low water intake is affecting production, it may be helpful to monitor water intake and to have a water sample analyzed. If water consumption is low, some of the more likely problems include stray voltage on the watering system, limited trough space, low water flow rate, poor placement of watering devices and cleanliness. Consumption can be reduced by high levels of iron (above 0.3 ppm) and/or sulfur (above 1 ppm of sulfide) and manganese (above 0.05 ppm). Sometimes other minerals can be too high, but are not common. Bacterial levels should be low with coliform counts negative. Algae should be minimal. Nitrates or nitrites occur when surface water contaminates a ground water source. Nitrate ion levels should be below 50 to 100 ppm. If combined with high levels in feeds, nitrates can reduce reproductive performance. Although there is little information documenting pH problems, desirable pH is between 6.0 and 8.0.

Cows need and do consume large quantities of water. For best production efficiency, clean water, free of contaminants, should be made available for ready and free access.

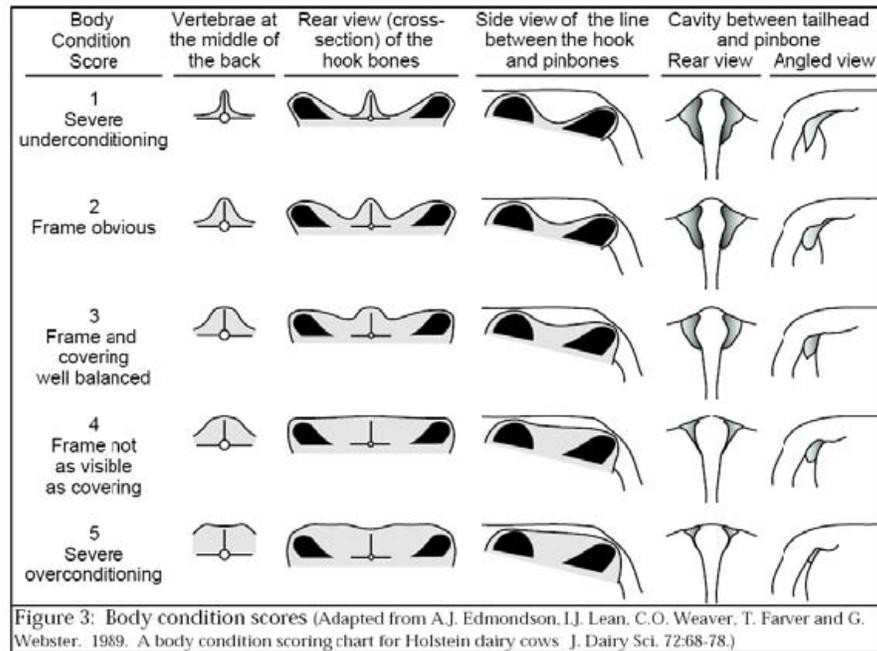
### When Was the Last Time You Saw A Fat Cow?

Chase Scott, Extension Agent, Southwest Virginia

The merits of proper body condition relative to stage of lactation have long been known. But body condition scoring remains an underutilized measurement on many of today’s dairy operations. Body condition is the amount of body reserves (fat) that an animal is “carrying” on their back. Body condition score (BCS) is a numerical score that attempts to quantify the amount of fat that is visually evident on a cow. Obviously, the optimal/tolerable body condition score of dairy cattle shifts with stage of lactation.

Proper BCS should be considered when designing a herd’s feed ration. The “high stakes” of today’s dairy market (higher milk prices, high cost of replacements and higher feed prices) encourages a higher level of feed efficiency. For instance, lower producing cows or a herd with high average days in milk fed too high a level of energy may become too fat. It may be advantageous to feed these cows a ration that is more economical with a lower energy density. Dairy cattle that have a high body condition score have stored valuable energy in the form of body fat, rather than using that energy to produce more milk. The additional cost of fat cows is observed in the subsequent lactation. Cows that are too fat at parturition have more complications during calving and lower dry matter intake that predisposes the cow to increased occurrence of metabolic disorders such as fatty liver, ketosis, and displaced abomasums. All of these metabolic disorders insult the cow, ultimately decreasing total lactation yield and increasing cull rate.

Figure 1



Industry movement away from the use of rBST increases the importance of body condition scoring of cows. Recombinant BST promoted a higher level of milk production during later stages of lactation, which assisted producers in maintaining proper body condition on cows. Discuss the development of a BCS measuring and recording program with your herd veterinarian and nutritionist. Body condition score can easily be determined during vet herd checks and this information is valuable to the herd nutritionist during ration formulation. Figure 1 illustrates BCS at different points on the cow (vertebra, hook/pin bones and the tailhead) while Table 1 summarizes the recommended BCS at various stages of lactation.

Table 1

<b>Recommended body condition scores at various stages of lactation are:</b>	
<b>Calving</b>	<b>3.0 to 3.5</b>
<b>Breeding</b>	<b>2.5</b>
<b>Late lactation</b>	<b>3.0 to 3.5</b>
<b>Dry period</b>	<b>3.0 to 3.5</b>

### **\*DAIRY PRICING UPDATE\***

Recent information has appeared in various media outlets regarding the retail price of milk. The following is a fact sheet of information and statistics that can be used as background information to address this issue. This information was provided by Dr. Lon Whitlow and SUDIA.

\* America's dairy farmers do not set the retail price of milk. The price, set by retailers, is determined by a number of factors, including market supply and demand, processing and transportation costs, and retail store margins.

\* Bill Herndon, a dairy economist at Mississippi State University, examined Southeastern dairy farmers' operating costs in April 2005 and April 2007. According to his research, dairy farmers' operating costs have increased nearly 30 percent while the price they receive for milk has only increased 9 percent.

\* The same research shows that the price of corn, the primary feed ingredient for dairy cattle, has risen 65 percent while overall feed costs have increased nearly 42 percent. The prices farmers pay for fuel and electricity have increased 40 percent.

\* On average, farmers receive only about 30 percent of what consumers spend on dairy products. The vast majority -- about 70 percent -- is split among others in the marketing chain, including processors, distributors and retailers.

\* Dairy farmers are hurting economically. The prices they have received for milk have increased recently from the lowest prices they have been paid in the past 30 years. Unlike most other businesses, dairy farms cannot directly pass on increasing production costs.

\* Milk, just like other foods -- coffee, juice, lettuce and even paper products -- can vary in price due to changes in supply and demand. When demand for dairy products is higher than supply -- as is the case today -- people can see higher prices in the supermarket.

\* Demand for U.S. dairy products such as milk powder, whey and lactose has increased dramatically in places such as China, Korea and Central America. Since 2003, U.S. dairy exports have 77 percent by value and 75 percent by volume, according to the U.S. Dairy Export Council.

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