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DAIRY PIPELINE

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Department of Dairy Science
Blacksburg, VA 24061
540/231-4762 Fax: 540/231-5014
www.vtdairy.dasc.vt.edu

"...a reduction in milk production per cow and an increase in metabolic problems when he exceeds his magic number by as little as 2%."

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Magic Numbers

I work with an excellent dairy producer here in Southwest Virginia who frequently talks about his "magic number." He isn't talking about his lottery ticket, he is referring to the number of cows his facility can handle and handle well. He relays to me that he sees a reduction in milk production per cow and an increase in metabolic problems when he exceeds his magic number by as little as 2%. In times of difficult cash flow I see more producers crowd their barns in an attempt to ship as much milk as possible, sometimes under the advice of other agribusiness professionals. Often times the result of this is only temporary as they watch their cull rate rise and pregnancy rate drop. Both of these parameters have a big impact on the overall profitability of dairy operations. The industry recommendation is 2 ft. of bunk space per cow. I would add that this measurement is only valid if feed is distributed along the entire bunk length. Many times I have seen mineral feeders and round bales of hay occupy some of this bunk space, not to mention when the TMR mixer empties out a little too fast. To the same point, when adding up the number of stalls in your barn, should you include a stall that—no matter what— no cow uses? Research has shown that crowding free stalls 120% or greater have a negative effect on cow comfort. Cows that cannot lie down for at least 11 hours per day are more likely to develop lameness and other health problems. Pasture and loafing lots are ways to "get by" with a few less stalls, but what happens when wet or cold weather doesn't allow you to turn those cows out for extended periods of time? It is recommended to provide one watering device for every 15-20 cows or two foot of tank space per 20 cows. Also providing at least two watering locations per group of cows will help minimize the effect of "boss" cows. Have you added waterers if you have added cows? Don't forget cows should be doing one of four things; milking, eating, drinking and laying down. If 10-15% of cows are standing 2 hours after feeding time then there may be a cow comfort or crowding issue. Just like the producer I mentioned, everyone's management and facility has a "magic number," and the faster you determine yours, the better.

—M. Chase Scott,
Extension Agent, Southwest Virginia
(276) 223-6040;
miscott1@vt.edu

Nitrate Levels in Forages

Nitrate nitrogen is the form of nitrogen usually taken up by growing plants. High levels in forages can interfere with the ability of the animal to transport oxygen in the blood. Nitrates are very water soluble and easily absorbed by plants and accumulate when growth is slowed. This can be from a lack of water or other nutrients. Nitrates tend to accumulate in the stem of the plant with little concentration in the grain. When the plant is actively growing the nitrates will be converted to plant protein. This stops when plant growth stops. A minimum of three days of growth is needed to reduce plant nitrate levels after a rain.

Certain species of plants such as sorghum and sudangrass tend to accumulate nitrates more than other species. Even in normal years these plants may have elevated nitrate levels. However; alfalfa, bar-

(Continued...)

Upcoming Activities

Oct 11-13: 8th Mid-Atlantic Dairy Grazing Conference & Organic Dairy Field Day, Wytheville Meeting Center—For more information contact Chase Scott at miscott1@vt.edu or (276) 223-6040.

Alfalfa Haylage/Baleage Conference:

Dec 7: Wytheville, Wytheville Meeting Center
Dec 8: Rocky Mount, Franklin Center
Dec 9: Weyers Cave, Weyers Cave Community Center

Discount for registrations received by Dec. 1.
For details, contact Chase Scott for details at (276) 223-6040 or miscott1@vt.edu

If you are a person with a disability and require any auxiliary aids, services or other accommodations for any Extension event, please discuss your accommodation needs with the Extension staff at your local Extension office at least 1 week prior to the event.

In the News-Sept. 16, 2010

The U.S. Drought Monitor now lists 68% of the state either under a drought or abnormally dry. This is markedly higher than the 7% listed in June.

Gov. Bob McDonnell is asking for federal assistance for more than 40 counties in Virginia where conditions have affected farming.

For more information on Dairy Extension or to learn about current programs, visit us at VT Dairy—Home of the Dairy Extension Program on the web at: www.vtdairy.dasc.vt.edu.

Charlie Stallings,
Dairy Extension Coordinator &
Extension Dairy Scientist,
Nutrition & Forage Quality

ley, corn, millet, oats, and rye all can have high levels of nitrates under the right conditions. Johnsongrass can also be high in nitrates and can be a problem in highly infested sites.

Do not feed freshly chopped plants or hay made from drought stressed plants. Ensiling will reduce nitrates by about 50%. Usually it is best to wait at least 3 weeks after ensiling before feeding. It is possible to check plants for nitrates before feeding by sending a sample to a forage testing laboratory. Check animals for signs of labored breathing, staggering, or panting. These signs are all related to inadequate oxygen being delivered to tissues.

> "High levels in forages can interfere with the ability of the animal to transport oxygen in the blood."

Nitrates are usually expressed as either nitrate or nitrate-nitrogen as a percent of the dry matter. Make sure you know which unit is being expressed since there is a 4.4 fold difference. Since nitrogen makes up only a portion of the nitrate molecule, expressing as nitrate-nitrogen will result in a smaller number than expressing as nitrate. The relationships in Table 1 have been proposed by Teutsch and Meldrum and are in line with other recommendations (Ishler et al.)

Nitrate, % DM	Nitrate-N, % DM	Guidelines
0-.25	0-.06	Considered safe
.26-.50	.06-.11	Can be a problem for pregnant & young animals, limit to 50% of ration dry matter
.51-1.5	.12-.34	Danger; limit to 25% of
1.5+	.34+	Potentially toxic; **do not feed**

Table 1. *Source: Teutsch and Meldrum, 2006*

—Charlie Stallings
Extension Dairy Scientist,
Nutrition & Forage Quality
(540) 231-3066; cstallin@vt.edu

Precautions when using Feeds with High Levels of Nitrates

1. *Ensile forage if possible to reduce nitrate levels. It is best to ensile for three weeks before feeding, however, any ensiling is better than none. Making material into dry hay does not reduce nitrate levels.*
2. *Raise the cutter bar during chopping to leave more of the stalk in the field and reduce nitrate levels.*
3. *After a rain wait at least three days before chopping drought stressed corn plants to allow nitrates to be converted in the plant.*
4. *Introduce feeds containing nitrates slowly and do not allow access when cows are extremely hungry.*
5. *Dilute forages containing nitrates with clean feeds by using another forage and/or high fiber by-products such as whole cottonseeds, brewers grains, etc.*
6. *Feed a balanced ration with adequate nutrients, especially vitamin A.*
7. *Young, growing, and pregnant animals are the most susceptible to nitrates and should be observed for signs of toxicity if given feeds containing nitrates.*
8. *There are no magic feed additives to counteract the effect of nitrates.*
9. *Avoid water with high levels of nitrates.*
10. *Test feeds after ensiling if there is reason to expect problems with nitrates.*